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Message from the International President

Dear SIEC Friends,

Welcome to the 150th edition of *The Review,* a peer-reviewed journal for global business educators by global business educators. *The Review* is published annually and will provide in-depth articles from our members that can be helpful in the classroom or with administrative responsibilities. Each article is research-based and adds to the body of knowledge in global business education. As in the past, a brochure for the upcoming conference will be included. Thank you Eric Kisling, USA, for taking on the task of editor this year.

For our international conference this year we will be in the twin cities of Albury and Wodonga, Australia. Albury/Wodonga is located approximately half way between Melbourne and Sydney on the New South Wales and Victorian border. Situated on the majestic Murray River, Albury/Wodonga is close to snow fields and is known for its regional wines and produce. Attending a conference is the best way to learn and work together for the benefit of our students. I do hope to meet you at the 2010 conference and subsequent conferences as well. Future conferences are planned in:

2011	Basel, Switzerland
2012	Denver, Colorado, United States
2013	Germany
2014	Finland

With warmest SIEC regards until we meet again,

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Membership Information

Membership in SIEC-ISBE is open to everyone with an interest in Business Education. SIEC-ISBE has many national chapters.

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Preface

We would like to thank the wonderful professionals who filled the role of reviewers for this journal. Due to the number of manuscripts received, multiple reviewers were needed this year. Without their assistance, the job of editor would have been much more difficult. Thank you to Sabine Gillitzer, Germany; Eileen Broughton, Scotland; Marcia James, USA; Michaela Stock, Austria; Beverly McAnnally, USA; and Dana Moore Gray, USA. All are SIEC/ISBE members who volunteered to help when asked. Thank you.

We hope that you find the articles included in this year's *Review* interesting. Thank you to everyone who submitted a manuscript for consideration. Without your submissions, we would not have had a journal.

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Using Podcasting for Blended Learning

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Abstract

Blended learning is a hybrid learning format combining some of the best features of distance learning and traditional face-to-face classes. Through the use of online course management sites and other media, students can access material at their convenience and attend a reduced number of classes that then emphasize interaction. This educational opportunity is especially valuable for working adults who cannot attend traditional classes. However, the lack of lectures can be a challenge for students who learn best by hearing. Podcasting, which involves the creation and distribution of audio and/or video files, is one tool that can help students to learn better and more easily.

Introduction

A class using a blended learning (also called hybrid) format relies heavily on the distribution of online materials, while still allowing for some face-to-face contact. This system thus provides the convenience of distance learning, without completely forsaking the advantages of personal interaction. This hybrid format tends to be particularly popular with working adults who have limited time for time- and location-bound classes, providing what some call the "best of both worlds" (Dziuban, Hartma & Moskal, 2004, p. 3).

However, many materials are visually-based, which can put audio-learners at a disadvantage. Podcasting allows instructors to create audio files of lectures or other materials, thus helping students who learn better by listening. After these files are downloaded to portable mp3 players (for example, an ipod), students can listen to them anywhere—in the car, in the gym, etc. This also allows students to review the material as often as desired. Therefore, podcasting provides an additional resource for students, and is often provided to students in courses using a blended learning (hybrid) format at the Pennsylvania State University in the United States and Buskerud University College in Norway. The following sections provide a short background on blended learning and podcasting, and describes how podcasting can be used effectively in a course using a blended learning format.

Background on Blended Learning

The availability of internet access has opened new opportunities to students who cannot or do not wish to attend traditional college courses. Although correspondence courses are not new, the use of online course management systems and email communication makes delivery of course material faster and easier. A problem with distance learning is the lack of face-to-face interaction, although online discussion boards can improve interaction and communication among students who are not physically assembled together. With a blended learning course, limited face-to-face sessions are scheduled so that students can still benefit from personal contact while still limiting the time spent in a classroom.

The specifics of a blended learning format course vary widely based on the needs and desires of the students, instructors, and institutions. At one end of the spectrum, students spend only a minimum amount of time physically together, such as at the beginning and end of the course (Martyn, 2003). At Buskerud University College, students meet together for a few days at a time two to three times during the semester. The Pennsylvania State University typically offers one hour per week, although students are not required to attend the weekly sessions if they find it inconvenient. This format, which was designed by the students themselves, has been used every semester since 2006 and has proven very popular. A traditional class section is also offered during the same semester, providing students a choice of format. While it is common for students who originally enrolled in the traditional class to migrate to the blended learning course, as of yet, not a single student has moved from the hybrid to the traditional class format.

Dziuban and associates (2004) had similar success using blended learning over seven semesters. They found that the use of blended learning resulted in course attrition rates similar to those of face-to-face classes. This was important finding given that completely online courses had attrition rates approximately 50% to 100% higher than both blended and face-to-face courses. Although the differences were only slight, the proportions of students earning passing grades were consistently

higher in blended learning courses than in either online or face-to-face courses. Only 5% of instructors were dissatisfied with their hybrid experience while 88% were satisfied and 7% were neutral.

Blended learning is not an easy way out, as some might think based on the reduced class time. In contrast, it presents a new challenge for students as they must "relearn how to learn" (Dziuban et al. 2004, p. 9). Instead of passively sitting in a classroom listening to an instructor, they must actively take more responsibility for learning the material on their own. For students who learn best by listening to lectures, or who appreciate the instructor's vocal inflections and stress on certain items, podcasts can fill an important gap in the hybrid model.

Background on Podcasting

There is some debate over the origin of the term podcasting. Many believe it started with Ben Hammersley (2004), who suggested several terms for audio blogging while writing in *The Guardian*. The term is generally thought to be a combination of "cast" from "broadcast" and "pod" from the Apple iPod, although the creation of audio file distribution on the internet did not start with the iPod. Podcasts are generally in the MP3 format, which means they use the MPEG audio format of encoding and compressing data.

One benefit of podcasts over other online media is that they can be downloaded so that listeners can listen to them without being connected to the internet or even to a computer. Through the use of portable MP3 players such as iPods, Zunes, and other brands, students can take their learning on the road. Udell (in Campbell 2005, p. 38) contends that the reason podcasting and other forms of "rich media authoring" have become so popular is the combination of pervasive broadband internet access, fast personal computers, and portable MP3 players ("the new transistor radio"). According to the 2008 Statistical Abstract of the United States, factory sales of MP3 players increased 1400% between 2003 and 2007 (United States Census Bureau, 2007).

Brittain, Glowacki, Ittersum and Johnson (2006) contend that the difference between podcasts and other audio and video files accessed via the Internet is that podcasts are created on a regular basis and then distributed automatically through a subscription. Although many podcasts are syndicated in this way, it is not the only way to use them. Instructors can create podcasts relevant to class as needed or desired. Students may also create one-time podcasts to demonstrate their learning of particular material. Although aggregators such as iTunesU are not strictly necessary, the ability to regularly download podcasts as they are released is indeed an advantage. Many publically available podcasts may also be relevant to class, the majority of which are free. This provides an easy, low-cost tool for instructors to use with blended learning courses.

Using Podcasts for Courses Using the Blending Learning Format

Traditional-age students attending college now are part of the Net Generation or "Digital Natives." Unlike previous generations, they cannot remember a time when the Internet did not exist, and they have grown up being both entertained and educated through the use of TV, video games, and the Internet (Prensky, 2001). Digital Immigrants, on the other hand, have had to learn new technologies as they have emerged. While it might be expected that Digital Natives would be more likely to listen to podcasts, research has shown that older students in a course using blended learning were more interested in podcasts than younger students and more likely to use them (Robinson,

2007). Given that those in the Digital Immigrant age group are also those most likely to sign up for hybrid courses, podcasting is a good tool for providing class material in a portable audio format.

Two related questions to be answered before created podcasts to accompany university courses are, "What types of material should a single podcast cover?" and "How long should a single podcast be?" Instructors who also teach traditional classes may wish to create podcasts from their lectures, providing students an experience more resembling class attendance. While this requires little additional time, there are many drawbacks including the legal issue of student questions and comments being recorded and distributed, the need to provide written transcripts of verbal material as required in some states, and the difficulty of locating a particular topic within a long lecture if a student wishes to review a particular concept. At the Pennsylvania State University, materials created for students in blended learning format sections are also provided to students in the traditional sections. A common concern among instructors considering podcasting is the fear that students will stop attending class if podcasted lectures are available. White (2009) investigated this issue and found that students used lecture podcasts to solidify their understanding of material after a classroom lecture, rather than substituting for class attendance.

Short discrete "modules" are used at both the Pennsylvania State University and Buskerud University College. These 3-5 minute podcasts cover one particular topic or a few related concepts. The shorter format makes it easy to find and choose a given topic, and requires only a small amount of time to create and edit. A review of the most popular non-academic podcasts that are available on the internet shows that shorter podcasts that are released frequently (at least weekly) are becoming the accepted practice. From the instructor's point of view, shorter, focused podcasts can provide a library from which the instructor can mix and match select podcasts for a given class in the future. Although the exact mix of topics covered in an hour-long lecture may change from year to year, instructors can use the same shorter podcasts repeatedly by selecting the appropriate topics in the desired order.

However, shorter podcasts also presents a disadvantage for people who listen while driving or exercising. Unless the listener sets up the MP3 player so that a series of podcasts are played in order, listeners must stop, choose, and start a podcast every few minutes, analogous to choosing an individual song rather than an entire album or playlist. This can be difficult and even dangerous when driving, which was the most common time for listening to podcasts reported by adult learners in a previous study (Robinson, 2007).

Given the increasing ease with which videos can be made, some instructors create videos (vodcasts) as well as audio-only podcasts. At Buskerud University College, nursing students in a course using a blended learning format can learn procedures or view particular ailments such as skins sores by watching instructor-made videos online. The University of Michigan School of Dentistry experimented with a variety of media to capture and distribute class lectures (Brittain et al. 2006). Although video and slide presentations with the accompanying audio were made available online, the majority of students preferred simple audio podcasts because they listened to them in the gym or while commuting.

Because creating podcasts and vodcasts is relatively easy and inexpensive, students can create their own to share audio and video material with fellow students when they are not meeting face-to-face. Drawing on personal experience in radio broadcasting, Campbell (2005, p. 44) compares podcasting to radio, saying that "the connection is essentially one-to-one" as a central speaker talks to

distributed individuals. For students and instructors in a course using a blended learning format, this individual-to-individual feeling can help create and maintain a bond when out of class. At the same time, students who create podcasts or vodcasts for each other can also contribute to a feeling of community.

In courses at Buskerud University College, where the vast majority of students speak English as a second language, podcasts produced for classes offered in English allow students to learn course material while also practicing their language and listening skills. Some podcasts are posted on outside sites with links then placed on the online course management system, while others are available through cooperation with The Pennsylvania State University and iTunesU. Creating and distributing podcasts is thus very easy in most situations.

Podcasting Basics

The simple Internet search for "how to make podcasts" provides a number of sources, including YouTube videos and other tutorials (e.g. Dietz, 2009; Robinson & Ritzko, 2009; Stephens, 2007; VanOrden, 2009). However, a short introduction to the creation of podcasts will be presented here as an introduction using the software Audacity as an example. In general, the skills needed to create podcasts are no more complex than those needed to create text documents.

The hardware and software can vary, but the most basic equipment and programs will suffice. A computer and a basic microphone, either free-standing or in a headset (as it frequently used for online conferencing with, for example, Skype) are the essential ingredients. Some portable MP3 players can record audio and video, allowing the creator to go out "in the field" rather than being connected to a computer. Free software for recording and editing podcasts are readily available, although more professional programs can also be purchased. Two of the most commonly used programs are Audacity/Lame for PCs and GarageBand for Macs. Mikat, Martinez, and Jorstad (2007) provide an extensive summary of hardware and software options and specifications. Recording a podcast with Audacity simple and straightforward: 1) press "record"; 2) speak into the microphone; and 3) press "stop."

The audio file can then be used as-is, such as when an instructor records a lecture, easily edited to delete undesired file segments, such as coughs, misspoken words, long pauses, etc. A representation of the sounds is shown visually, making it easy to highlight segments and then delete or copy them. With practice, "uhhhhhh," "you know," "I mean," and other phrases that are often repeatedly in conversation, can be edited by visually recognizing the pattern in addition to hearing the phrases. While it may be more advantageous to distribute podcasts of lectures that were recorded live in the classroom in their unedited form, other podcasts are likely to benefit from editing. However, it should be noted that a "judicious" use of verbal place fillers ("you know," "I mean," "uh," etc.) can make the podcast seem more real and less "canned" (Robinson, 2007). Practicing and recording a given podcast more than once can be beneficial to the final product, but requires more time and can sometimes lead to an artificial feel. Instructors who are initially reluctant to record themselves may find that the ability to edit out undesired parts gives them confidence to continue making podcasts. This editing can also be performed by someone other than the speaker if desired, especially when time is an issue. As with editing a written document, editing an audio file is recommended, but can easily take more time than it took to originally record the podcast.

Once recording and editing is completed, the audio file is converted to MP3 format with Lame (which is an automatic process once connected to Audacity) and uploaded to a website for distribution. This is roughly the same as posting a document file. Podcasts can be stored on web servers and class management system websites and can also be shared via tools such as iTunes. A common area within iTunes is iTunesU, where educational institutions are able to host podcasts. The podcast is then downloaded either manually or automatically if the listener has subscribed to the podcast. Instructors may choose to restrict access to their own students or allow public access.

Conclusion

Blended learning provides a number of advantages over both traditional classes and online classes in balancing distance learning with face time. Listening to podcasts provides learners with another tool for acquiring and reviewing information in addition to readings and lectures thus reaching a wider audience with varying learning styles. Because of the portable nature of many MP3 players, listeners can take their learning with them "on the road," thus providing great opportunities for learning. Since podcast-creation is simple and inexpensive, podcasts are an ideal way to generate and disseminate knowledge. Given the increase in the number of MP3 players sold in the past few years, and, in addition, the trend of MP3 players being integrated into cell phones, it is likely that podcasting will also grow as the world becomes increasing digital and mobile.

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Learning Spaces in a Second Life

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Abstract

Pedagogy in virtual worlds is a new phenomenon that is evolving into something very different from the traditional classroom. Learning spaces are currently considered physical spaces, but with virtual worlds, learning spaces can now be designed in multiple ways for any given course. No longer is one constrained to location. A teacher can take their class to see international sites without the costs associated with a physical visit to the same location. As teachers begin to think about their methods of instruction and how best to enable their students to learn fully and completely, the pedagogy that is employed in these classes will be very different from that used in the traditional classroom. It will also be affected by the students that are enrolled in the course and how they see the use of virtual worlds in their own education. Because of these influences, pedagogy using virtual learning spaces needs to be studied for future business education classes that take place in virtual worlds.

Introduction

Learning spaces have been a brick and mortar concept for several decades in higher education. However, with the advancement of web technologies and Web 2.0 tools, learning spaces are beginning to appear in virtual environments. The use of virtual worlds in higher education has moved learning spaces to these areas and allowed students at a distance to take advantage of these resources as their counterparts on campuses across the world use brick and mortar spaces. The purpose of a learning space can consist of creating a learning environment that pushes critical thinking, collaborative and active learning, and the hope for knowledge creation (Long & Holeton, 2009). According to Michael Wesch (2008) most classrooms were built during a time when information was considered a scarce commodity and difficult to obtain Once new media environments were created, a new type of thinking emerged, necessitating a new philosophy of thought. Now learning spaces have become change agents themselves through the flow of human knowledge across the Internet and accessible by laptops and web 2.0 devices. With these new devices and a 24-hour access to information and knowledge, virtual learning spaces will account for a new way that people will work, collaborate, and conceive and construct knowledge (Long & Holeton, 2009).

Virtual worlds have been adopted by educators to offer discussion and work spaces, coaching utilities, and digital resource repositories (Karpati, 2009). As educators look at ways to take advantage of new Internet technologies, technology is capturing, storing, and distributing large amounts of data across the Internet on a daily basis. Many are of the belief that the Internet is the world's database and people are consumers of these data. Through the use of virtual learning spaces, new communities will be formed that will begin to learn and build. These communities will become communities of practice (COPs) that become knowledge building groups through the use of the data collected from the Internet. As data is collected, these COPs will begin to create information which through sharing and communicating becomes knowledge and when practiced becomes wisdom (Allee, 1997). As a result of this data transformation, new educational paradigms have evolved. One of these paradigms is the use of virtual worlds for learning spaces.

Virtual learning spaces should allow students to have an experience set within a technological environment that gives them a strong sense of actually being in that environment (Warburton, 2009). Learning environments created in virtual worlds should include persistence of the virtual environment,

a shared space allowing simultaneous participation among multiple users, the use of a 3-D personified representation known as an avatar, the interaction of users with objects in the virtual world, the interaction should occur in real time, and the virtual world should be similar to the real world (Smart, Cascio, & Paffendof, 2007). All of these features will allow for a positive experience for students using the learning spaces.

Warburton (2009) claimed that Second Life (SL) is one of the best virtual worlds for the creation and use of virtual learning spaces in education today. Second Life has all the features necessary to create virtual learning spaces for education. It is a 3-D virtual world which is created and developed by its inhabitants. The virtual environment provides avatars with a sense of "being immersed in-world". Avatars called “residents” are able to create, buy, sell, and/or interact with objects in SL. Students are able to interact in real time as if they were in a brick-and-mortar course.

North American Education Institution’s use of Virtual Learning Spaces

For the past two years a North American education institution has been using virtual learning spaces in Second Life to enable students who are taking distance education courses to have a sense of presence and a sense of space. Second Life has been used in this institution’s business and information technologies education (BITE) program to assist students in the task of learning and working. Johnson and Lomas (2005) suggest that the virtual learning space needs to meet the demands of the department’s curriculum when being designed and created. This is very important because “a learning space will shape what people do in it and, therefore, will promote or diminish certain types of learning” (Long & Holeton, p. 47). Hunley and Schaller (2009) reflect this idea by explaining that institutions that assess the use of learning spaces must also consider what pedagogical practices yield optimal learning. This suggests that learning spaces and pedagogy are intertwined (p. 34). The BITE program created learning spaces to assist students from a distance to feel immersed into that institution’s campus even though it was in a virtual world. The following data depict what these students believed about the virtual learning environments. To understand how students used learning spaces in their courses, a survey was developed and administered through the Perseus Survey Solutions (PSS) system.

A survey-based research methodology was used to collect data concerning student perceptions of learning spaces in a virtual environment. Students who were enrolled or had taken courses in the BITE program that used SL learning spaces were sent an email to request their participation. The questions consisted of fill-in-the-blank and check-box and radio-button selection questions administered through the PSS system over the World Wide Web. The questions addressed the students’ personal strategies for using learning spaces in a virtual environment. The survey asked the post-secondary students demographics questions, questions about computer usage for SL, for which purposes students used SL, their personal perceptions of the learning spaces. The following questions concerning the use of virtual learning spaces were then posed:

- Describe your most positive experience in using virtual learning spaces in SL.
- Describe your worst experience in using virtual learning spaces in SL.
- What advice would you provide to a professor who was thinking about using virtual learning spaces in their course’s curriculum

Lincoln and Guba (1985) express that the sample size should be large enough to provide informational redundancy. Patton (1990) expresses that sample size is dependent upon many factors including "what is useful, what will have credibility, and what can be done with available time and resources" (p. 184). The challenge is to make sense of all the findings of the study, keep bias in check, and to record for the reader what has been found (Patton, 1990, p. 371-372; Denzin & Lincoln, 2000). A total of 167 post-secondary students were contacted via email and asked to participate in the survey. Of that number, 128 surveys were submitted with 122 completed and usable, for a response rate of 73 percent. That response rate is adequate for drawing conclusions regarding survey variables. For open-ended questions, answers were imported into Microsoft Excel and themes, keywords, and phrases were identified based upon the review of literature. The following section discusses the results of these submissions.

Results

Tables 1, 2 and 3 display respondents' demographic information and length of time they have used learning spaces in Second Life. The respondents to the survey were predominantly female (72.1%) between the ages of 28 and 32 (30.3%) and the majority were members of the senior class (70.5%).

Table 1: Age.

AGE	MALE		FEMALE		TOTAL	
	#	%	#	%	#	%
18-22	0	0.0%	17	13.9%	17	13.9%
23-27	7	5.7%	12	9.8%	19	15.6%
28-32	23	18.9%	14	11.5%	37	30.3%
33-37	0	0.0%	9	7.4%	9	7.4%
38-42	4	3.3%	12	9.8%	16	13.1%
43-47	0	0.0%	15	12.3%	15	12.3%
48-52	0	0.0%	5	4.1%	5	4.1%
53-57	0	0.0%	4	3.3%	4	3.3%
TOTAL	34	27.9%	88	72.1%	122	100.0%

Table 2: Class Standing.

CLASS	MALE		FEMALE		TOTAL	
	#	%	#	%	#	%
Junior	8	6.6%	12	9.8%	20	16.4%
Senior	18	14.8%	68	55.7%	86	70.5%
Graduate	8	6.6%	8	6.6%	16	13.1%
TOTAL	34	27.9%	88	72.1%	122	100.0%

Table 3: Length of time using Second Life.

TIME USING	MALE		FEMALE		TOTAL	
< 6 Months	29	23.8%	75	61.5%	104	85.2%
6-11 Months	0	0.0%	4	3.3%	4	3.3%
1-2 Years	5	4.1%	5	4.1%	10	8.2%

> 2 Years	0	0.0%	4	3.3%	4	3.3%
TOTAL	34	27.9%	88	72.1%	122	100.0%

When students were asked the open ended questions, trends appeared concerning their positive use of learning spaces, their worst experience within the learning spaces, and what advice to give to a professor who was considering implementing virtual learning spaces into their course curriculums. The resulting trends show that a majority of the students enjoyed meeting and communicating with other avatars (54.1%), had software problems involving voice chat or audio in Second Life (30.3%), and the recommendation to professors to have patience and give enough time for students to use the virtual learning spaces to complete their projects (72.1%). Tables 4, 5, and 6 show the resulting themes expressed by the respondents to the three open-ended questions.

Table 4: Themes from, Most positive experience using virtual learning spaces. (n=122)

Theme	N	%
Meeting and Communicating with other avatars	66	54.1%
Building and using the Sandbox (practice area)	20	16.4%
Learning a new technology that could possibly impact the future direction of distance learning	19	15.6%
It was something I could relate to and still learn	10	8.2%
Having an additional method of communication	7	5.7%
Totals	122	100.0%

Table 5: Themes from, Worst experience using virtual learning spaces. (n=122)

Theme	N	%
Software problems with using Second Life (Audio/Voice Chat)	37	30.3%
Learning the new technology in a short summer session class	28	23.0%
Personal schedule made it difficult to meet in-world and use the learning space	22	18.0%
Not being able to maneuver in the virtual learning space	17	13.9%
Building	11	9.0%
Griefers: Original residents of SL	7	5.7%
Totals	122	100.0%

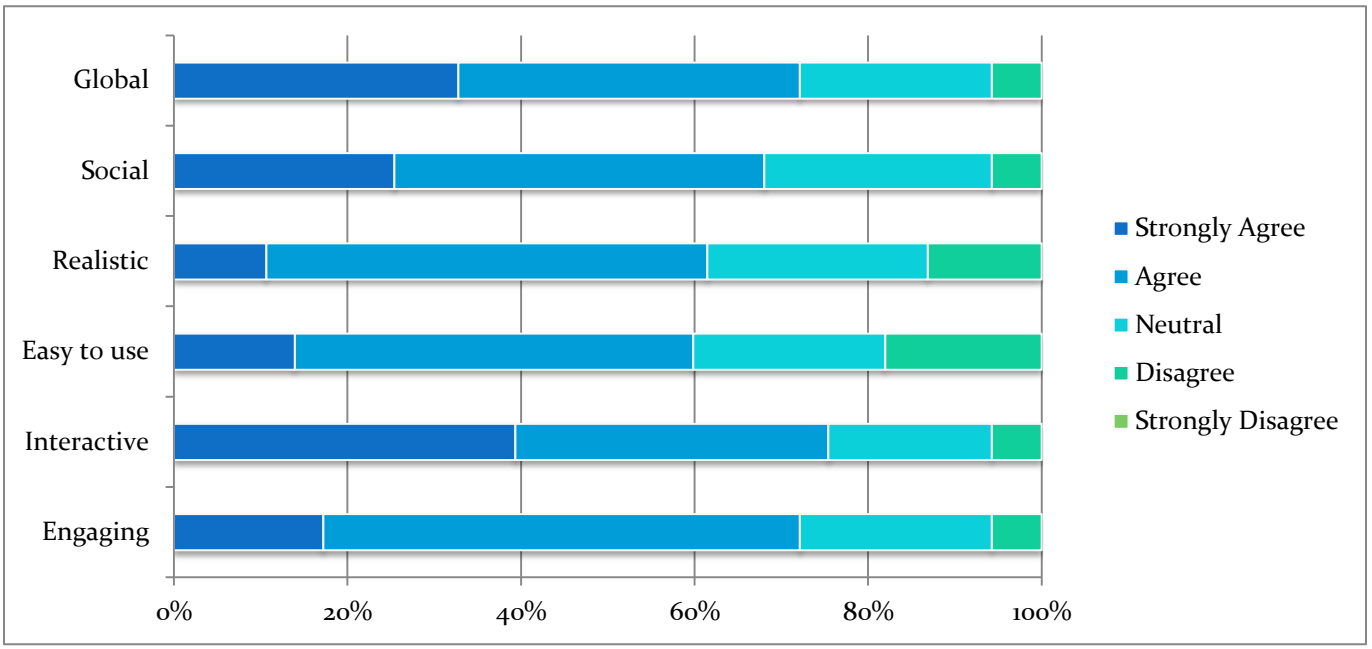
Table 6: Themes from, Advice to future professors considering using virtual learning spaces. (n=122)

Theme	N	%
Be patient with students and provide enough time to work on assignments	88	72.1%
Provide basic orientation training for newbies	22	18.0%
Have more discussions within second life	12	9.8%
Totals	122	100.0%

Respondents were also asked to respond to six characteristics of virtual learning spaces to score from strongly disagree to strongly agree. The six characteristics were: engaging, interactive, easy to use, realistic, social, and global.

Table 7 illustrates the responses of the participants. There were no strongly disagree selections for any of the six characteristics. Participants selected agree or strongly agree 72.1% for engaging, 75.4% for interactive, 59.8% for easy to use, 61.5% for realistic, 68.0% for social, and 72.1% for global. The highest disagree was found for easy to use at 18.0%. Students showed a positive attitude toward virtual learning spaces the majority of the time. As table 7 illustrates, there is still technical and realistic work to be done to improve learning spaces within virtual worlds.

Table 7: Six characteristics of virtual learning spaces.



As the data shows, the students' attitude toward the virtual worlds was mainly positive. Respondents enjoyed the social aspect of using virtual learning spaces, but were disappointed with the technical difficulties that the virtual world caused. Their main advice to professors considering using virtual learning spaces was to be patient and allot more time than normal to allow students to learn the environment and begin using it as it was intended.

Ten Virtual Learning Spaces Strategies

Virtual learning spaces are important to students in accomplishing their assignments and achieving scholarship. There are ten strategies that Shirley Dugdale (2009) has described for brick-and-mortar campuses (p. 52) which can be transformed to address the virtual world environment of Second Life. These ten transformed strategies are:

1. Analyze the entire virtual world as a learning space
2. Develop insight from user experience and engagement within the virtual world
3. Plan to support multiple types of learners within the virtual environment

4. Use the virtual environment to gain space to accomplish curriculum goals within the virtual world
5. Leverage the growth of distance education classes to solidify the virtual learning space paradigm among department faculty
6. Seek strategic partnerships among other educational institutions using the virtual world to develop other learning spaces at strategic educational locations
7. Consider the virtual classroom as a learning space that students can return to after the class session has ended
8. Link space use to learning assessment
9. Develop virtual learning spaces that foster the creation of communities of practice among students
10. Recognize that learning spaces can be anywhere, anytime tools for your curriculum

These strategies will allow faculty to take advantage of the virtual environment to create engaging, active learning spaces that will increase student performance through engagement, interactive activities, and realistic assessments. The following discussion focuses on these ten strategies of virtual learning spaces.

Analyze the Entire Virtual World as a Learning Space

Through the analysis of the virtual world as a whole, course planners can determine where students can venture to become engaged in the course content. For example, if your course is to cover basic programming skills, one could have students go to the NASA Jet Propulsion Laboratory in Second Life and look at the case study on the Mars lander project that went wrong when the software programs were not compatible due to project teams having coded using standard measurements and others using metric measurements. It was a costly mistake, but one that NASA learned from and others are free to learn from by using the entire virtual world as a learning space. By taking students to other locations in the virtual world they are able to learn through experiencing the virtual environment versus just being told what happened.

Develop Insights from Virtual Users

It is important to analyze the students and what their needs may be through a planning process that engages them from the beginning of the process. Understanding their needs helps one to plan the learning spaces required to assist the students the most with the subject matter being taught.

Plan to Support Multiple Types of Learners

Using the data collected from the virtual users, learner types can be identified and strategies can be employed to address any needs that may occur. Are there technical skills needed to use the virtual learning space? Are there navigational skills needed to use the space? Questions such as these must be addressed in order to serve all the learners in the course that is going to employ virtual learning spaces.

Use the Virtual Environment to Gain Space

The virtual world can be beneficial from a space standpoint through stacking learning spaces vertically into the virtual sky at an unlimited height giving the advantage of using a small space. This is important if an educational institution is using Second Life and does not want to rent multiple islands in the Second Life grid. Planners can begin building virtual learning spaces in the air to meet the demands of multiple courses wanting to employ virtual learning spaces.

Leverage the Growth of Distance Education Classes to Solidify the Virtual Learning Space Paradigm among Department Faculty

As more students engage in taking distance education courses, more faculty need to begin to seriously consider employing virtual learning spaces in their curriculums. As brick-and-mortar costs continue to rise, faculty moving to virtual worlds for learning spaces can save their institutions costs. This same faculty will find that their students are more engaged and excited to learn.

Seek Strategic Partnerships among other Educational Institutions Using the Virtual World to Develop other Learning Spaces at Strategic Educational Locations

Educational institutions need to begin considering partnering with organizations that have already developed learning activities within the virtual world. Many of these organizations are very willing to allow visitors to explore their virtual space. But, education institutions can also partner with real-world organizations to help develop in-world activities to assist in the teaching and learning of the student. This will only enhance the learning spaces that are developed.

Consider the Virtual Classroom as a Learning Space that Students can Return to

Many individuals have the idea that only a brick-and-mortar classroom is a learning space. This thinking causes the ignoring of a powerful tool that the virtual learning space gives to a course. The learning space itself can be the classroom! At the North American education institution all the virtual classrooms are the learning spaces. Some courses have multiple learning spaces with a different space that is visited each new class period. This enhances the learning since students feel engaged and immersed into a realistic environment.

Link Space Use to Learning Assessment

This strategy focuses on asking students how well the virtual learning space has supported their performance in the course. Faculty should also be asked how they have employed the learning space in their curriculum. Through this analysis one can determine if the virtual learning space needs to be adjusted to help the needs of both student and faculty groups. There needs to be a method for obtaining feedback and measuring learning in the use of the virtual learning spaces.

Develop Virtual Learning Spaces that Foster the Creation of Communities of Practice among Students

The use of virtual learning spaces will foster the development of learning communities that in turn will form communities of practice for the classroom. Students will begin to transform data into information, information into knowledge, and knowledge into wisdom. The community will learn together and from one another. This fostering of community building through the use of virtual learning spaces will enhance the curriculum. Faculty will become more engaged in a facilitation role than a lecturer. This will enable learning to occur among everyone included the teacher.

Recognize that Learning Spaces can be Anywhere, Anytime Tools for Your Curriculum

Virtual learning spaces can be created in any location within a virtual world and they can be accessed at any time on any day. This allows the course planner to use these learning spaces as tools for creating engaging activities for students. It also enhances the curriculum of the course and engages the student. Understanding this one concept gives a course planner the power to give distance education students an experience of engagement and satisfaction that encourages the student. This can be seen as a win-win for both teacher and learner.

Conclusion

The future of learning spaces is rapidly changing as virtual worlds improve and faculty at educational institutions begin to engage in its use. By implementing the ten strategies for virtual learning spaces, students from a distance can become more engaged and have access to materials that were not available. Academic disciplines can give students access to locales that would be impossible to reach in the real-world environment. This is the power of using a virtual world like Second Life. Using the virtual world allows the building of learning spaces that can be accessed anytime from anywhere. Implementing a strategic plan for incorporating virtual learning spaces into course curriculums is advantageous to educational institutions and to students. The future is bright for virtual learning spaces.

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Orientation on Learning Outcomes with Multidimensional Student Assessment

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Abstract

The orientation towards learning outcomes implies the need for competence-based learning as well as a competence-based student assessment. The ideas for innovative self and peer assessment presented in this paper enable individualized business education. Furthermore, various methods and instruments for a multidimensional design of students assessment are introduced, such as assessment circle (360°feedback), portfolio, learning diary, skills demonstration, and appraisal interview.

Introduction

Educational programs have recently shifted from an input orientated to an output orientated approach. It is no longer enough to concentrate on the input (e.g., classroom design or curricula) – there has to be an increased focus on output and outcome of the learning process. Very often, the term output is used synonymously to the term outcome, although they describe different notions. Whereas output is defined as the determined stage of development of the knowledge and competences of students after a specific point in time, the European Union (2009) states that outcome is concerned with what a learner is expected to know, understand, and be able to demonstrate after a successful completion of a process of learning. Learning outcomes are further expressed in terms of competences and skills, that can be demonstrated and therefore assessed (Adam, 2004). Accordingly, there is a relationship between learning outcomes, competences, assessment criteria, assessment, and teaching methods (Moon, 2004).

The objective of this paper is to focus on the assessment of competences of the individual learner and to explore several functions of student assessment in order to maximize the learning outcome of the individual learner. After discussing the theoretical background of assessment and competence-based learning, multidimensional instruments for student assessment are described.

The Concept of Assessment

Education mainly intends to encourage the learning progress of the individual learner. In order to determine and ensure the increase in learning, it is necessary to check the student's attitude, motivation, learning strategy and performance. The regular documentation of knowledge, skills, abilities and attitudes allows teachers to control the desired learning outcome of learners (Riedl, 2004). The variety of purposes for which assessments are conducted shows how complex the process of classroom assessment actually is. The main functions of assessment can be divided in:

a. Prognosis – assessment of learning: This summative form of assessment is used for selection and promotion, signalling students' progress, outcome, ranking and admission qualification to parents, other institutions, and society in general. It is done mainly at the end of a course or program and is completed with a final grading.
b. Diagnosis – assessment for learning: This formative assessment is carried out throughout the learning processes, often more than once. It is interactive and aims at supporting further learning steps. The teacher gives feedback on the student's work, highlights strengths and weaknesses, and identifies special learning needs.
c. Metacognition – assessment as learning: This form of assessment emphasizes the role of the learner. The student is involved in the assessment process as an active and critical self-assessor. Self-monitoring and self-correction is the ultimate goal, which is met when learners are able to manage their own learning process and to make changes as a result of self-reflection in order to reach the learning target (Earl, 2003).

Regarding the orientation on learning outcomes, it is the teachers' responsibility to focus on how students learn and how to design an effective learning environment. The selection of appropriate teaching techniques as well as the development of suitable assessment instruments is strongly linked to the learning outcomes (Adam, 2004). Therefore the assessment criteria (objectivity, validity and reliability) and further the chosen assessment instruments are implied by the learning outcome and its

resultant competences (Moon, 2004). The evaluation of learning outcomes or rather competences is mainly conducted with the function metacognition (assessment as learning) because of its collaborative nature.

As aforementioned, the focus on learning outcomes requires competence-based learning methods which lead to competent individuals. Adam (2004, p. 6) describes a competent person as "someone with sufficient skills and knowledge and capabilities". The definition and background of competence-based learning is described in the following chapter. Furthermore, the concept of the Practice Firm as an example for a competence-based learning method is introduced.

The Concept of Competence-Based Learning

The elementary objective of all kinds of education and teaching is the acquisition of a holistic ability to take action by the learner. In German, the term *Handlungskompetenz* is used to indicate a person's competence to be able to solve problems self-dependently according to a given situation in life (Peterssen, 2001; Riebenbauer & Stock & Slepcevic, 2009). Common learning and teaching strategies which aim to develop and further develop the learners' competences in decision-making and self responsibility are e.g., active learning, contextual learning, experiential learning, situational learning, applied learning, and problem-based learning.

The concept of competence-based learning goes back to the theories of vocational and progressive education with two main representatives Dewey and Kilpatrick. Their learning theory approach of the project method also known as learning by doing mainly influenced today's learning strategies by introducing the four steps purposing, planning, executing and judging (Dewey, 1994; Berchtold & Stock, 2006). The goal of competence-based learning is to equip learners with the ability to take action which enables them:

- to handle complex situations in life,
- to solve problems autonomously,
- to act self-responsibly and self-dependently,
- to complete actions which are goal-orientated, planned and reflected on,
- to be pro-active towards their own learning progress,
- to develop different competences (Peterssen, 2001).

Figure 1 shows that this holistic ability to take action also called *Handlungskompetenz* results from the intersection of professional, social, methodological and personal competence. Classroom lessons can not focus on all four competences evenly and all the time because teaching stresses different aspects depending on learning target, topic, content and method (Peterssen, 2001). However, teachers have to take care that all four competences are considered sufficiently to gain a comprehensive ability to take action. This needs adequate, multidimensional learning and teaching methods.

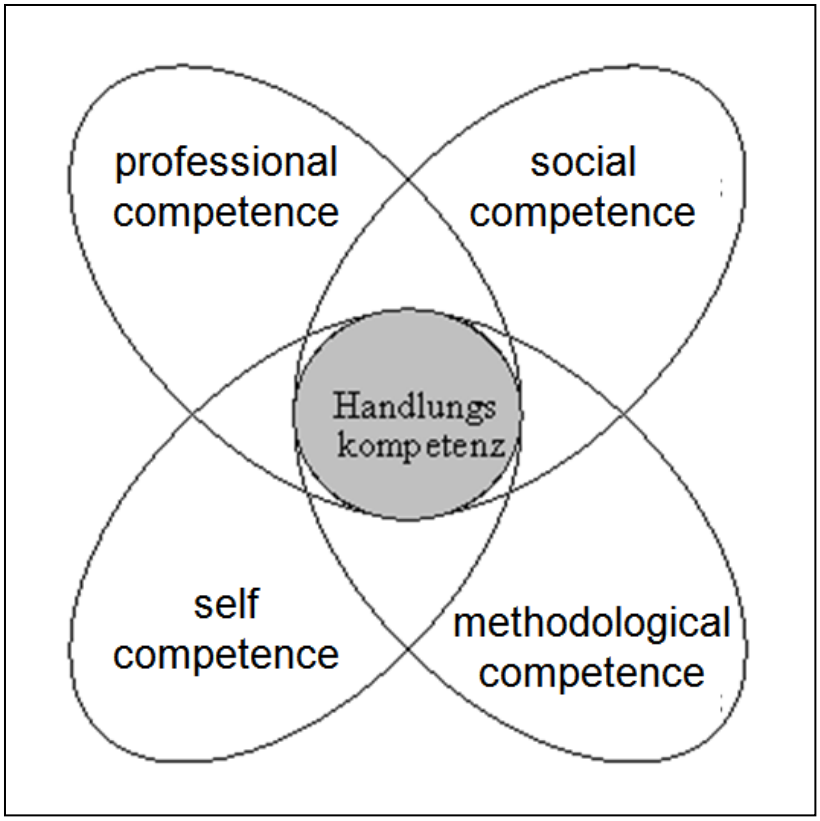

Figure 1. Holistic-integrative ability to take action (Peterssen, 2001, p. 14)

Business simulations are significant examples for competence-based learning with the important variation Practice Firm. Several terms are used for this complex learning and teaching method all over the world, e.g., Virtual Enterprise in the United States, Virtual Company in Asia and Training or Practice Firm in Europe.

Practice Firms can be defined as pedagogical learning places where procedures similar to real-life companies are executed based on business principles in a virtual market economy. Business and economic systems are simulated as realistically as possible to enable trading and cooperation within the national and international network of Practice Firms. The main difference between real-life companies and Practice Firms is that no real goods, services and money are exchanged (Berchtold & Trummer, 2001). The method Practice Firm aims at enabling learners to act independently and to make their own decisions according to existing business rules and legal regulations. While working and learning in this close-to-reality business environment, the students can put their theoretical knowledge into practice to train key qualifications and gain new business skills. Thus, the Practice Firm offers the possibility to develop the learner's professional, social, methodological and personal competences to operate autonomously in a given situation (Riebenbauer & Stock & Slepcevic, 2009).

Some Methods for Multidimensional Student Assessment

Two Practice Firms are established at the Department of Business Education and Development at the University of Graz in order to represent a practice-orientated education and to optimally prepare students for their potential role as a teacher of business and economic subjects. The first Practice Firm *KFUNIline Übungsfirma-WeiterbildungsGmbH* has been operated since 1996 and offers further education on the Practice Firm market. The second Practice Firm is called *eXpand International Consultancy GmbH* and was founded in 2004 and supports other Practice Firms in going international

with market analyses and consulting services. The students in these Practice Firms have their own office where they carry out all day-to-day business activities according to their line of business. Additionally to the office work, three-hour meetings are held weekly to discuss commercial and pedagogical topics as well as to reflect on learning processes (Riebenbauer, 2004).

The following instruments for a multidimensional assessment are results of the authors' teaching experience with these Practice Firms at the University of Graz. All presented instruments are used in the Practice Firms although not all instruments are always used at the same time. The instruments will be shown by the example of the Practice Firm KFUNI*line*.

Requirements of this complex learning method can be met by the use of instruments for a multidimensional assessment of student's achievement. The connection between requirements and assessment instruments is shown by the following examples:

- Learners must be able to act independently (e.g., assessment by skills demonstration, assessment sheet).
- Learners should not be left alone with their problems (e.g., assessment by learning diary, assessment circle).
- Learners need to be accompanied, advised and supported by teachers in the Practice Firm (e.g., assessment by e-portfolio appraisal interview).
- Learning processes or actions in the Practice Firm must be goal-oriented, planned, autonomous and complete (e.g., assessment by portfolio) (Berchtold & Stock, 2006).

All introduced assessment methods are either based on the concept of self-evaluation or on the concept of evaluation by others. Both concepts help students to become aware of their processes of learning and lead to a reflection upon their actions. Furthermore, both concepts allow students to gain autonomy because of their chance to take part in their assessment by evaluating themselves or their colleagues (Winter, 2008).

Assessment Circle

Based on the concept of 360°Feedback, the assessment circle is used for self-evaluation as well as for evaluation by others. It can be inserted at various stages of the course to illustrate the learning process and learning progress. Moreover this instrument enables students to be aware of their self-perception compared to how they are perceived by others (Paradies & Wester & Greving, 2005). Figure 2 shows the assessment circle at the Practice Firm KFUNI*line.*

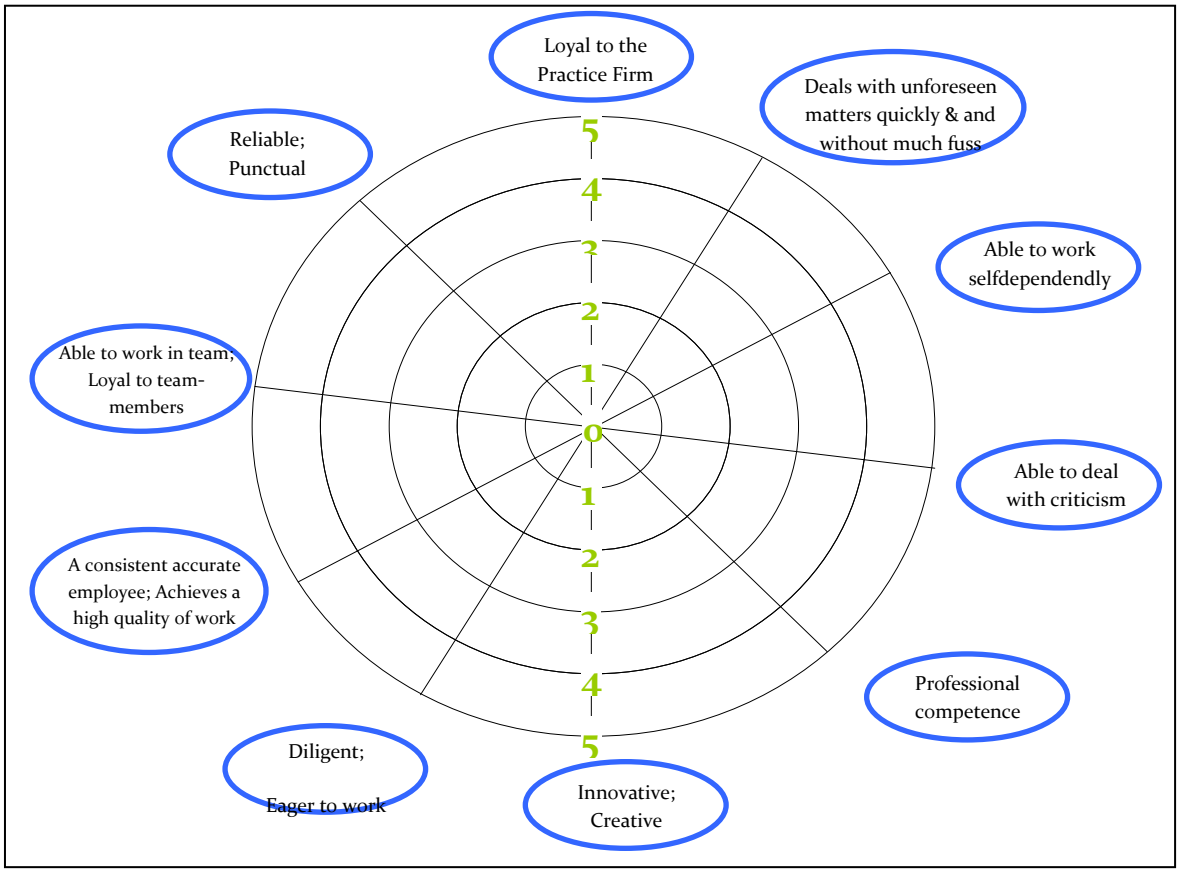

Figure 2. Assessment Circle in a Practice Firm

At KFUNI*line* this method is used to give students a clear picture of the maturity level of their own skills. It enables students to recognize the gaps between the current and desired maturity level in connection with their work at the Practice Firm.

Assessment Sheet

This instrument is used to evaluate the different competences of students by their colleagues. At the Practice Firm KFUNI*line*, the criteria for this instrument are defined by the management, according to the four main competences of Peterssen (2001). It should be remarked that students do not like to grade their colleagues. Winter (2008) describes that students give critical feedback but are unwilling to give marks. Nevertheless, students are very often in a better position to evaluate certain criteria, as they have a better overview of their colleagues' performance and workload than teachers. This is especially true for group work outside the classroom, like the daily work in the Practice Firm office.

Portfolio

The portfolio is a personal collection of objects, which describe the learning and working career, experiences and achievements of students (Winter, 2008). The organizational flow of a portfolio is described by the three essential steps "collect, select, and reflect" (Belgrad, Burke & Fogarty, 2008). This instrument shows the learning progress over a long-term period and allows comparing students' performances. At KFUNI*line* the portfolio contains different works of the students, partly chosen by them (e.g., application diary, personal learning targets, reflection report).

ePortfolio

"The ePortfolio is a personal digital collection of information describing and illustrating a person's learning career, experience and achievements" (EIfEL – European Institute for E-Learning,

2009). This instrument has been introduced at KFUNI*line* to promote the students' self-reflection of their learning processes. Furthermore, the ePortfolio enables a customized skills enhancement and visualizes the development of competences over long time periods. In the future, the ePortfolio will also be implemented in the Master-Curriculum *Business Education and Development* at the University of Graz and students will therefore get professional guidance and coaching.

Learning Diary

Winter (2008) describes this instrument as a personal report about observations, musings, and feelings with regard to the learning process. It is possible to integrate the learning diary as a part of the portfolio as demonstrated by the KFUNI*line*. Here, students use the learning diary to write and reflect on their daily work within the Practice Firm. They also have to include a chronicle of the working hours.

Skills Demonstration

Adapted from the Finish National Board of Education (Räkköläinen & Ecclestone, 2005), skills demonstration is also implemented at the Practice Firm KFUNI*line*, where students demonstrate their professional skills which they have improved in the course of their work within the Practice Firm. Skills demonstration is assessed by the Practice Firm teacher and contains for example the presentation of the financial statement or the moderation of a weekly meeting.

Appraisal Interview

The appraisal interview is based on the concept of management by objectives and also conducted at the Practice Firm, where this instrument is divided into two parts: The first part is held at the beginning of the term, by collaboratively fixing targets between teacher and students. This leads to a higher motivation of students and allows them to work independently and make their own decisions. The second part takes the form of an appraisal interview conducted at the end of the term and contains the topics learning success, achieved and failed targets, problems, team work and atmosphere in class.

Conclusion

This paper showed how the presented instruments can be implemented for multidimensional student assessment, by using the example of the Practice Firm KFUNI*line* at the University of Graz. All instruments are influenced by a wide range of other aspects such as objectives and outcomes, as represented in Figure 3. The holistic assessment of competences, as a result of outcome orientation, requires a clear statement of the objectives, expressed as learning targets. Furthermore, supporting measures like warning systems (in case of bad marks) or the activities to guarantee the transparency of the assessment requirements and assessment criteria should be implemented.

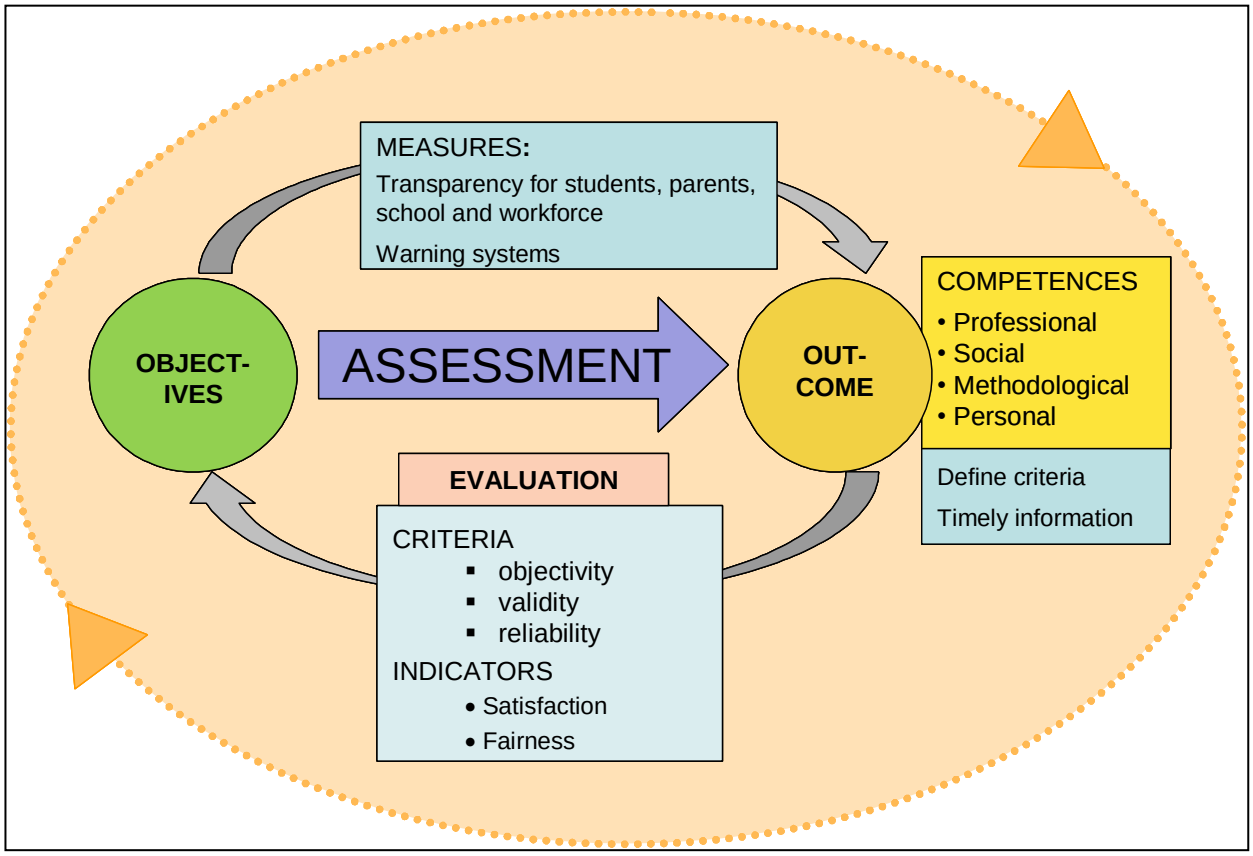

Figure 3. Competence-based assessment

The consideration of those measures in combination with clearly defined assessment criteria allow the evaluation of the conducted assessment. Indicators for a successful evaluation are given by the satisfaction with the procured information about the assessment and the perception of a fair assessment.

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The Core Competence and Attitudes of The Small Business Owner-Managers: A Combination Of Cognitive, Affective And PsychomotorCompetences and Attitudes

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Abstract

Over the coming decade, up to 2015, nearly 80,000 Finnish small and medium-sized individual enterprises possibly with a tradition as a family business will have to find successors for their current owner-managers. The current teaching and learning of entrepreneurship do not deliver enough entrepreneurs. The curriculum at all school levels should be refreshed to meet the challenges that the future entrepreneurs have to face. The study examines the occupational competence and attitudes that small business owner-managers themselves consider essential to their work. They were given an opportunity to express their views in small focus groups of peer small business owner-managers. Consensus opinions formulated by the groups were then meticulously documented. The research approach is qualitative and the empirical data were collected through a Finnish adaptation of the Canadian DACUM model. The results expose the entrepreneurial core of the small business owner-manager. Affective and psychomotor competencies are highlighted alongside the traditionally emphasised cognitive competencies.

Introduction

The Need for Refreshing Curriculum Work to Create New Small Business Owner-Managers

Over the coming decade, up to 2015, a successor will be needed for nearly 80,000 Finnish enterprises just to fill the gap arising from the transfer of businesses to a new generation (Ministry of Trade and Industry 2005, 13). Most of the businesses seeking transfer to a new generation – as most Finnish businesses in general – are small enterprises or even micro-enterprises, strongly identified with

their owner-manager. Discovering a successor committed to entrepreneurship for such small enterprises is far from a foregone conclusion argues Römer-Paakkanen (2004, 2–3).

The public image of entrepreneurship and general business conditions in Finland is good and the education offering extensive. Still many young people shun entrepreneurship and show little willingness to choose this possibility. Finnish society manifests the paradox of entrepreneurship. Although the overall framework and infrastructure for entrepreneurs favours business, the positive attitude towards entrepreneurship does not translate into greater numbers of entrepreneurs. (Haavisto, Kiljunen & Nyberg 2007,71; Römer-Paakkanen 2004, 28).

The current educational approach will not deliver sufficient numbers of entrepreneurs, especially small business owner-managers in Finland. **It is therefore vital to learn how the small business owner-managers themselves perceive the expertise required.** This is an important question to be answered and therefore the research question is how the small business owner-managers **personally** define their own occupational competence and attitudes in the form of knowledge, skills and attitudes.

A higher number of entrepreneurs are needed, yet becoming an entrepreneur is anything but an uncomplicated process. It is influenced by many factors arising from both personality and external circumstances and culture, which is why the entrepreneur-to-be must possess a certain competence and attitude definable as capacity comprising knowledge, abilities, personal qualities and attitudes as well as values to which the entrepreneur is committed and to which the work and activities give expression. (Helakorpi 2005, 58; Ruohotie & Honka 2003, 54; Descey & Tessaring 2001, 12; Drexel 2003; Juceviciene & Lepaite 2005; Munch & Jakobsen 2005; Voorhees 2001).

The direction of the study is guided by confining the scientific phenomen to the interface of entrepreneurship, especially small business research (Kirzner 1973, 1979; Knight 1971; von Mises 1996; Koiranen 2000; Commission of the European Communities 2003; EQF 2004, Remes 2003; Römer-Paakkanen 2004; Ylinen 2004; Gibb 2005; Kyrö 1998, 2005) and pedagogics. The study represents a dialogue between theory, which deals with entrepreneurial competence and attitudes (Bloom 1956, 1964; Ellström 1992; Kankaanpää 1997; Voorhees 2001; Drexel 2003; Kupferberg 2003; Ruohotie & Honka 2003; Helakorpi 2005; Juceviciene & Lepaite 2005; Munch & Jakobsen 2005; Singer 2005), and the reality of the matter as expressed by small business owner-managers themselves. The results can increase the quality of entrepreneurial education as well as the amount of new entrepreneurs as soon as the importance of small business owner-managers' own views of their competence and attitudes in curriculum planning has been understood and accepted.

Relationship between competence and education

When correlating the study to earlier competence research, skill, qualification, ability, capacity, effectiveness and proficiency are integral elements of the concept of competence, which is an amalgam of knowledge, behaviour, attitudes and values and refers to mastery of a certain skill, such as learning or reaching goals. Competence is also linked to creativity, innovativeness, flexibility, endurance and accuracy and precision. The usage of the concepts competence and qualification has been wavering and no consensus has been reached regarding the semantic content of the two (Antwell 1997; Descey & Tessaring 2001; Ruohotie & Honka 2003; Heikkinen 2003; Juceviciene & Lepaite 2005).

Competence may thus be taken **to mean either a characteristic of the individual or the requirements of given tasks.**

To supplement the concept analyses with **an entrepreneurial point of view** Stoof et al.(2002) argue that it is not important to prove whether the definition of competence is true or not, but whether it is adequate in the context in which it is used. Hence, it is better to work with some guidelines, rather than a stipulated definition (Biemans et al. 2004). From this perspective Lans et al. (2005) would suggest that competences are: context-bound, subject to change, connected to activities and tasks, subject to learning and development processes and they are interrelated. Man et al. (2002) have categorised entrepreneurial competences in six key areas of related competences. The key clusters are opportunity, relationship, conceptual, organising, strategic and commitment competences. In the literature on competence profiles of entrepreneurs and managers, such competences that meet the outlined criteria and fit in one these six clusters can be recognised (Erkkilä 2000; Hoekstra & Van Sluijs 1999; Van den Tillaart 1987, Man et al. 2002; Onstenk 2003; Mulder 2001; McClelland 1987).

According to Bird (1995) there are a variety of methods available for developing a model of entrepreneurial competences and how to assess these competences; the various methods can be qualitative, quantitative, retrospective, concurrent, objective or self-report based. Although the above mentioned methods do have elements that should be taken into consideration, it can be concluded that they are not adequate for assessing the entrepreneurial competences **in the context of small business owner-managers and their educational further training.** The expertise that small business owner–managers themselves consider essential to their work requires a research method which allows for an interactive group setting where participants are free to talk with other group members. Consensus opinions formulated by the participants are then meticulously documented. At the same time, the finalized chart delivers competences which are a base for curriculum work in the educational further training.

Due to several different interpretations and definitions used in the various studies of the concepts of competence, qualification, skill and expertise the key interpretations considering the curriculum work have been summarized in Table 1. This summary may well give rise to inconsistency. At the same time however, it supports the **operationalization** of small business owner-managers' perceptions thus meeting the study's objective of increasing the quality of entrepreneurial education as well as the amount of new entrepreneurs.

The summary (Table 1) represents a selection of different kind of competence interpretations and shows the elements which may build up the entrepreneurial competence for curriculum planning. When analysing its contents Helakorpi (2005) has interpreted the concept of competence very widely but has not developed it to the level of a functioning theory. Munch and Jakobsen (2005) have narrowed the interpretation of personal competence to authentic work situations but not to educational learning processes in schools. Singer (2005) emphasizes the comparison between competence and performance. Ruohotie (20002) has concentrated on those competences needed in expert profiles but leaves an open question whether they can be equated to entrepreneurial competences.

Table 1 Key Interpretations Of The Concept Of Competence

Voorhees, R. (2001)	Munch B. & Jakobsen, A. (2005)	Drexel, I. (2003)	Ruohotie, P. (2002)
• Competence is the combination of skills, abilities and knowledge. • Conceptual learning model: – step 1: personality traits and characteristics – step 2: skills, abilities and knowledge. • Competences are built on the basis of integrative learning experiences. • Competences enable the performance of work-related tasks. • Practical application of competences = demonstration.	• Competence is relative and contextual. • Competence is a perspective into personal performance taking place in a given context. • Competence comprises the process of gaining insight. • Competence equals knowledge, skills and abilities in the combination required by individuals for practical problem-solving. • Competence applies to authentic practice (as distinct from planned practice).	• The concept of competence has an output orientation. • Competence focuses any visible learning process on its results. • Competence values experience over knowledge. • Besides formal and informal knowledge and skills, competence also comprises personal values, motivations and behaviours. • The holistic concept of qualification is replaced with the atomistic concept of competence. • An unlimited range of patchwork profiles replaces the traditional structure of workforce categorization.	The skills profiles of an expert: 1. Occupation-specific skills and knowledge. 2. General skills for work: • cognitive skills • social skills • media competence • creativity and innovativeness • leadership and management skills. 3. Self-regulation abilities promoting professional development: • achievement orientation • orientation to self • orientation to others • strategies for controlling performance; interests and style structures.
Helakorpi, S. (2005)	Ellström, P-E. (1992)	Juceviciene, P. & Lepaite, D. (2005)	Kupferberg, F. (2003)
• Competence means the capacity (skills and attitudes) of an employee to perform a given task. • Competence is personal expertise. • A person may possess competence for several different duties.	• Competence is the potential capacity of an individual to successfully handle certain situations and perform a given job or task. • Capacity is determined by observable – motor skills – cognitive skills – affective skills – personality traits – social skills.	• In the terms of epistemology, the concept competence can be identified with the concept of qualification. • Competence cannot be achieved through formal certification by an educational institution. • Competence is a hierarchic structure. • Competence consists of different levels: – behavioural competence – integrated competence – holistic competence.	• Creativity will surpass competence in importance in the society of the future. • Instead of bestowing competence, in future training will be based on research.
Singer, R. (2005)			
• Competence comprises more than knowledge. • Any trait can be a part of competence. Competence is closely related to successful performance.			

The significance of creativity will in future surpass that of competence, requiring us to address the issue of the types of education required in the future. However, this demands that we will be able

to discern in time the difference between successful performance in school and in working life, as argued by Kupferberg (2003). Insight process is an integral element of competence, bringing into play such characteristics as willpower, intuitive thinking, spirit and communication skills that impact on ability to manage practical problem-solving situations. However, Munch and Jakobsen (2005) suggest that the ability to learn from experience is valued and taken as part of the broader learning process. The views of these researchers are strong, yet not necessarily based on specific theory.

According to Bloom (1964) we have to focus on target attainment and to stop perceiving schooling in terms of racing, which has its major aim in the identification of those who are swiftest. Speed is not the issue, achievement or mastery is, and it is that model that should be employed in trying to develop educational programmes for the young (Eisner 2000, 5). A proper understanding of the importance of outcome and end result permits an output orientation. The focus in valuating learning results in future will be on individuality and fragmentation, but it requires also a synthesis and the vision being an unlimited range of patchwork profiles that discard the holistic competence concept. In education, this translates into a farewell to traditional workforce categories, claims Drexel (2003). Despite the need for specialized professionals, the primary concern in working life will be on broad-based education linked to a personality that exhibits strength, individual initiative, independence and the ability to reach analytically justified decisions.

Vorhees (2001) is one of the rare researchers who have produced a conceptual learning model. This model has two steps: a) personality traits and characteristics and b) skills, abilities and knowledge. However, this model represents a very general approach and does not clearly penetrate into practical solutions that originate from psychological and educational theories. As to Juceviciene and Lepaite (2005), their interpretations, though valuable contributions, are not suited for the purpose of educational objectives, whereas Ellström (1992) classifies the concept of competence in five categories but fails to provide any tool for the application of these categories in practical research.

Bloom and Krathwohl (1956) contribute a concrete classification as well as a model for adopting it into educational practice. Unlike Bloom's taxonomy, the examples of competence interpretations presented in Table 1 have not been widely used or researched in an extensive range of educational and cultural learning environments. Bloom's taxonomy has been employed the world over both as a basis in curriculum development and in practical applications in vocational education.

In conclusion, from the competence research of this study Bloom has emerged as a researcher who emphasizes the working capacity divided into cognitive, affective and psychomotor competencies using a theoretical model based on his taxonomy suited well to curriculum development. For the theoretical framework of my study Bloom's taxonomy underpins the classical knowledge–skills–attitudes -structure of learning method and evaluation (Hukari & Nuoreva 2003), by using verbs: think–do–feel, and identifies three domains of educational activities:

- **Cognitive category** (C), which involves knowledge and development of intellectual skills.
- **Psychomotor category** (P), which includes physical movement, coordination, and use of the motor-skill areas.
- **Affective category, (A)** which includes the manner in which we deal with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations, and attitudes.

The essential part of the Bloom's taxonomy is **the use of action verbs**. These action verbs describe the three-domain category of a person's thinking and activities. These verbs are used when planning, designing, assessing and evaluating training and learning effectiveness. (Bloom 1956; Bloom & Krathwohl 1956; Krathwohl, Bloom & Masia 1964; Dave 1967 & 1970; Hukari & Nuoreva 2003).

The topical nature of the Bloomian approach is bolstered by the European Commission's European Qualifications Framework for Lifelong Learning (EQF 2004). Reflections of Bloom's taxonomy can also be discerned in the principles of Finnish National Board of Education's national core curriculum for vocational education (2000) concerning common areas of emphasis and evaluation of core expertise.

To research the entrepreneurial capacity of small business owner-managers entails understanding the differences between knowledge, skills and attitudes the successful entrepreneur requires. Based on the earlier definition of the research question in the introduction of this paper this study will address the following questions: What are the core competencies and attitudes of small business owner-managers and how do core competences and attitudes reflect into cognitive, psychomotor and affective elements?

Competence in the sense of this study is taken to embrace both competence in the sense of competence and attitudes that cover the entrepreneurial capacity of small business owner-managers.

Methodology and Data Collection By DACUM Model

The objective of studying occupational competences and attitudes that small business owner-managers consider essential to their work requires a research method which allows for an interactive group setting where participants are free to talk with other group members. In my study, small business owner-managers were given an opportunity to express their views in small **focus groups** of peer entrepreneurs. Consensus opinions formulated by the groups were then meticulously documented. The approach of this research method is qualitative, in which the open subjectivity of the researcher is typical. (Eskola & Suoranta 1999, 211). The researcher's personal understanding of the phenomenon and the objects of the study impacts on the interpretation of the research data.

The data was gathered with the Finnish application of the Canadian **DACUM** (from Developing A CUrriculuM) model. (Adams 1975; Glendenning 1995; Coffin 2002; Westerholm 2006, 2007). DACUM has provided a tool for the precise determination and recording of the knowledge, skills and attitudes required in various occupations and it relates to either curriculum planning or human resources administration. The practical work of gathering the data in the DACUM sessions is performed by a **facilitator and a recorder**. (Adams 1975; Glendenning 1995; Coffin 2002).

The empirical data is based on seven samples of small business owner-managers. In addition to Finland, data was also gathered elsewhere in Europe and in Turkey: the data was obtained from 30 Finnish and 29 foreign small business owner-managers. The **Finnish** DACUM focus groups were selected in cooperation with the Federation of Finnish Enterprises during the fall of 2004 and spring 2005 in **Helsinki, Oulu and Kuopio**.

When describing the theoretical core of entrepreneurial capacity through a survey of literature it also appeared that small business entrepreneurship has become significantly less local. (Bloom 1956; Ellström 1992; Kankaanpää 1997; Voorhees 2001; Drexel 2003; Kupferberg 2003; Ruohotie & Honka 2003; Helakorpi 2005; Juceviciene & Lepaite 2005; Munch & Jakobsen 2005; Singer 2005). There is a

strong trend towards the global economy e.g. through networking. This was the reason for gathering data abroad with the four **foreign** DACUM focus groups in **Ankara, Vienna, Budapest and Klaipeda**, thus strengthening the validity of the research. These four foreign DACUM focus groups belonged to the Global Entrepreneurship project of the Helsinki Business College and were randomly selected with regard to this study.

Each DACUM focus group of the research consisted of 8–12 small business owner-managers. Their age varied between 25 and 65 years, they were both women and men, came from both vocational and academic educational backgrounds and most had at least 5 years experience as a small business owner-manager. All in all it was a very heterogeneous group.

In this study the researcher was the facilitator and the experienced sociologist and pedagogue was the recorder. The same persons recorded and analysed the whole research material, and if any differing views about interpretation arose, these were discussed until a consensus was reached.

During about two-day DACUM seminars a facilitator manages the identification process of the DACUM focus group of 8-12 members to ensure that the occupation is adequately covered. The facilitator cannot affect opinions and the consensus of the DACUM focus group has to be reached before recording the verb on the chart (see Fig. 1) by the recorder. The recorded verb is always a consensus of the DACUM focus group for the statement: **"As an individual (in this study: As a small business owner-manager) I must be able to…".** Figure 1 shows the relationship of the core competences and tasks at the DACUM - chart:

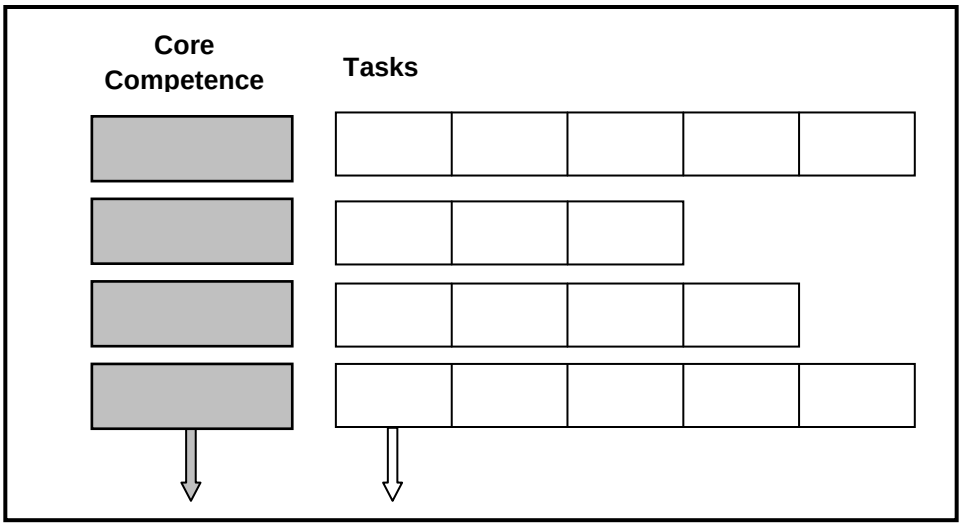

Figure 1. DACUM-Analysis (Coffin 2002, 16)

General areas of competences i.e. core competences are the major divisions into which tasks are organized. They are logical groupings of the tasks in an occupation or field. The number of core competences will vary from occupation to occupation, however, the number usually ranges from 8 – 12. With core competences completed, individual tasks form horizontal bands on a wall and each competency can be viewed as a subdivision or component of a core competence. As the chart is developed, it will likely become obvious that some tasks could fit equally well into other bands. In the case of a very small number of tasks, the decision on placement may seem to be a rather arbitrary one. The number of tasks in an occupation or field varies from chart to chart, however, a review of many charts suggests an average of 150 to 200 (Glendenning 1998, 13).

Results

DACUM seminar participants' views of the cognitive, affective and psychomotor core competences

During **the first round of data analysis** the knowledge, skills and attitudes appearing on the work analysis charts were organized into **a portrait of the small business owner-managers** based on the Bloomian vision and expressed as cognitive (C), affective (A), psychomotor (P), as well as cognitive-affective (CA), cognitive-psychomotor (CP), affective-psychomotor (AP) or cognitive-affective-psychomotor (CAP) core competences.

The classification was performed by the researcher, who served as facilitator to the groups. The classification was reviewed by the researcher and the recorder who had attended each DACUM seminar. Differences of opinion between the facilitator and the recorder were discussed until consensus was reached. The classification was based on subjective interpretation of both the work analysis charts of the seven seminars and observations made during the seminars. As Ruohotie (2006) has noted, there are **no clear-cut criteria for defining key competences**.

Results of Finnish DACUM seminars

The first round of data analysis gives rise to the conclusion that the **Finnish** small business owner-managers underscored clear cognitive and affective core competences as the most important aspects of their work. Equal importance was attached to cognitive-affective-psychomotor (CAP) core competences, which represent the entrepreneurial spirit and soul of the small business owner-managers.

Affective core competences were perceived as equally important as cognitive ones in work situations. Affective core competences were highlighted by young and more educated small business owner-managers (Helsinki and Kuopio) whereas older and less educated entrepreneurs (Oulu) underscored cognitive-affective, affective-psychomotor and cognitive-affective-psychomotor (CAP) core competences instead of the purely affective ones. The missing competences become visible in working life when they have not been part of formal education. (Allahwerdi & Westerholm 2005a, 21).

To find the very core competence and attitudes of the small business owner-managers the classified core competences were analyzed during **the second round of data analysis.** The tool used during this round was the **three-circle model**, the visual premise of which was taken from Tagiuri & Davis (1996, 200). This also allows the elimination of overlapping skills so that we may boil down that which the small business owner-manager must be able to do. The following Figure 2 is an adaptation of the three-circle model to analyze the core competences of Finnish small business owner-managers:

From the analysis of the three-circle model it can be concluded that **the core of Finnish small business owner-managers' capacity** lies in management, sales, marketing and strong self-esteem. Financial management and technical skills are not central to the capacity of the small business owner-manager but instead represent important support functions, as do other areas of traditional business expertise.

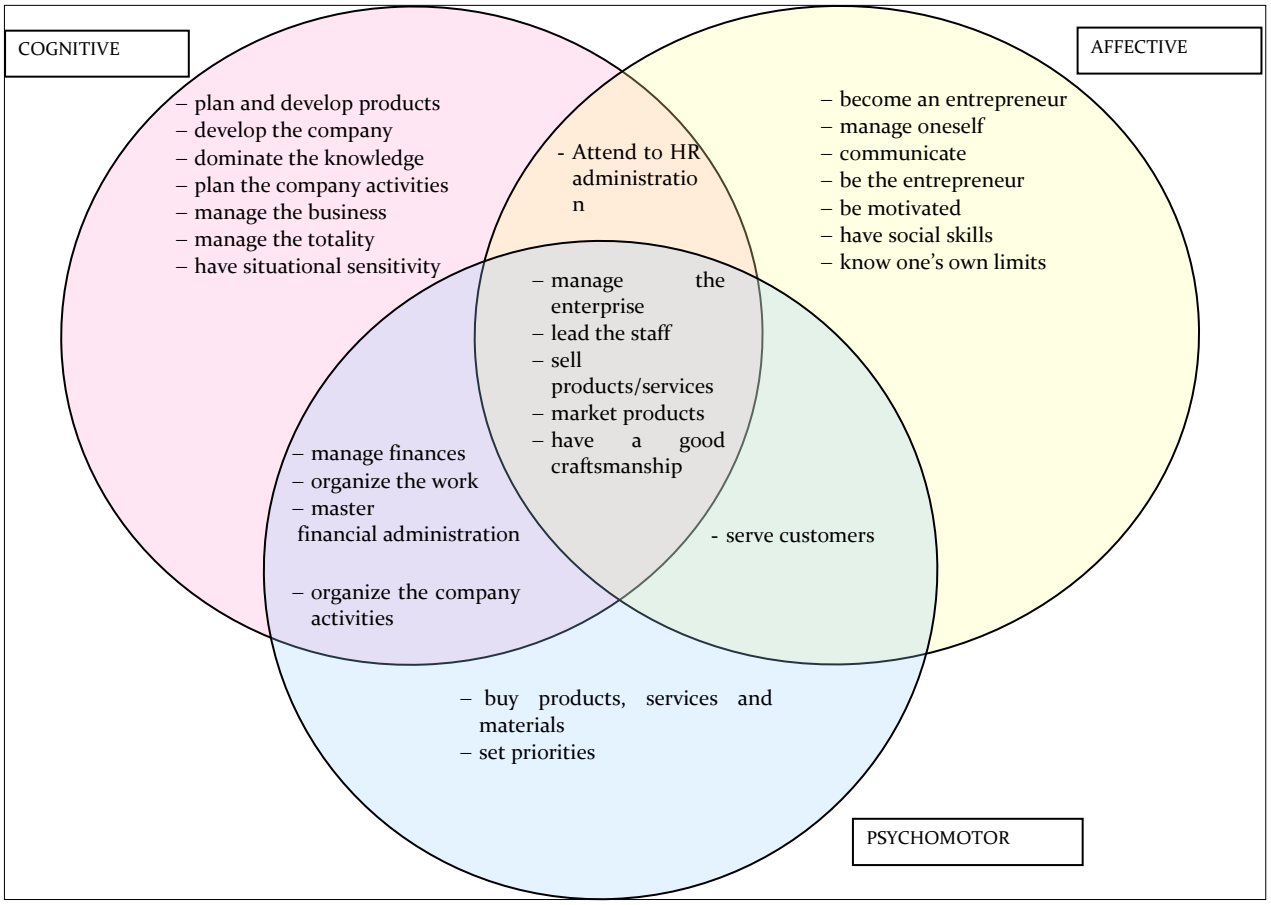

Figure 2. Core Competences of Finnish Small Business Owner-Managers Analyzed With The Three-Circle Model

Results of foreign DACUM seminars

The first round of data analysis gives rise to the conclusion that the **foreign** small business owner-managers underscored affective and cognitive competences as extremely important in their work situations. However, by far the most importance was attached to cognitive-affective-psychomotor (CAP) competences, which represent the entrepreneurial spirit and soul of the small business owner-managers.

The small business entrepreneurs in Budapest and Klaipeda rated the strongest in cognitive-affective-psychomotor (CAP) competences, thus emphasizing the core of entrepreneurial capacity in valuing their own expertise. In part, this testifies to a strength of purpose specifically as an independent small business owner-manager. Commonalities can be explained by historical factors such as the predominance of first-generation entrepreneurship. The emphasis on the cognitive sector in

Austria in contrast is testament not only to the underlying family business tradition in Austria (Allahwerdi–Westerholm 2005b, 2) but also to the configuration of a DACUM focus group of small business owner-managers. One third of this focus group had not been entrepreneurs for long and their business was a consulting one.

Here as well, the classified core competences were reanalyzed using the three-circle model (see Figure 3):

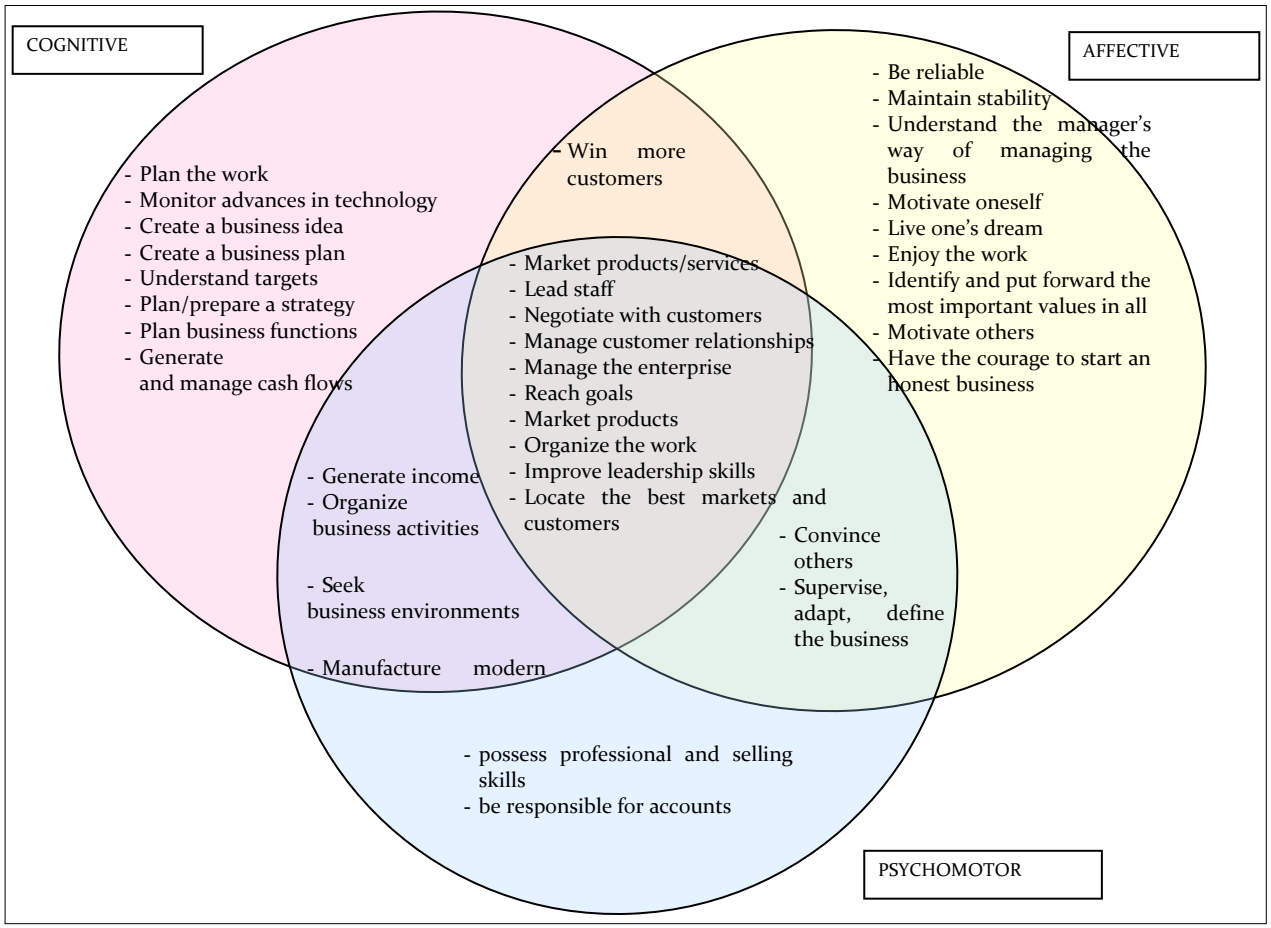

Figure 3. Core Competences Of Foreign Small Business Owner-Managers Analyzed With The Three-Circle Model

Analysis of the three-circle model verifies the finding **that the core of the foreign small business owner-managers' capacity** lies in management, marketing, negotiation and goal achievement. Financial management and technical skills are not central to the capacity of the small business owner-manager but instead represent important support functions, as do other areas of traditional business expertise. In this respect, the finding not only validates the views of Finnish small business owner-managers as to the core of their core competences; they in fact focus on an even smaller number of core competences.

Concluding the results: The core competence and attitudes of the small business owner-manager

The core competences and attitudes of all the small business owner-managers, analyzed using the three-circle model allow a response to the research question. Figure 4 below describes the core capacity of the small business owner-manager.

The small business owner-manager perceives both cognitive and affective core competence and attitudes as extremely important core expertise perceived as equally important in work situations. Yet the cognitive-affective-psychomotor (CAP) competence and attitudes are just as important. This even distribution of competence and attitudes in each of the categories in Bloom's taxonomy would indicate the existence of a certain entrepreneurial core. A slight difference was observed between younger and more educated entrepreneurs on the one hand and older and less educated entrepreneurs on the other and partly also entrepreneurs in the consulting business. The former attached more importance to affective core competences than the latter.

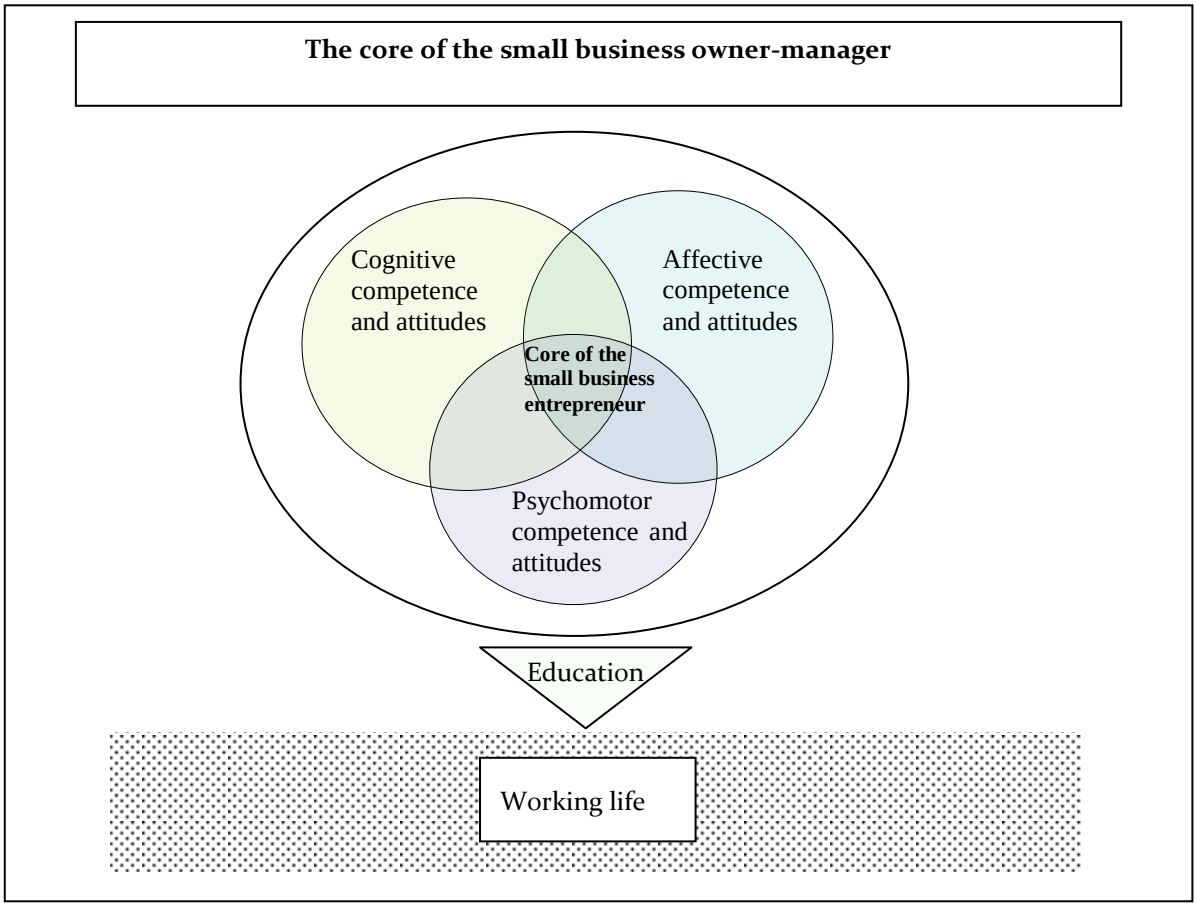

Figure 4. The Core of The Small Business Owner-Manager

No pure psychomotor competence and attitudes can be found at the core of entrepreneurial expertise. It is my observation that the small business owner-manager is not aware of the psychomotor nature of the transfer of cognitive knowledge. Cognitive knowledge thus transfers through action when necessary, yet the small business owner-manager does not perceive knowledge as action or takes it more or less for granted.

The core of small business owner-manager' capacity is devoted above all to **management and leadership**, while **sales and marketing** also play a role. T**he strong self-esteem** that realizes the entrepreneurial dream arises from the core of the small business owner-manager. Small business

owner-managers see financial skills and technical skills as necessary and important, but these do not constitute core elements of expertise and may thus be acquired from an outside source.

Discussion

The core competence and attitudes of the small business owner-manager described in Figure 4 and concluded in results is the answer to the research question: What do small business owner-managers feel they must be able to do? It can be concluded that **a distinct line should be drawn between what small business owner-managers must be able to do, and which core competences and attitudes are required in business administration.** The small business owner-managers must comprehend the concept and totality of the business along with the distinctive characteristics of each sector, i.e. they must possess cognitive knowledge of business activities. Yet the small business owner-managers need not be able to do everything themselves. The success in competition and in business is conditional upon the small business owner-manager having the entrepreneurial spirit and soul of a small business owner-manager. His or her competence and attitudes very clearly focus on the affective alongside cognitive knowledge but cognitive-affective-psychomotor (CAP) competence and attitudes form the foundation. The significance of the entrepreneurial spirit and soul discovered in this study is further highlighted by the important observation that the entrepreneurial core competence and attitudes manifest in quite an analogous form not only in Finland and elsewhere in Europe but also in the culturally divergent Turkey. The entrepreneurial spirit and soul of the small business owner-manager thus seems to **share the same characteristics despite certain differences in political or religious beliefs, ethnic background, or geographical location.**

The findings parallel theory to such a degree that the empirical findings obtained can in all likelihood be generalized beyond the cases studied also in terms of theory. Nonetheless, the subjectivity of the classifications always gives rise to the possibility of error. The boundaries between the categories of cognitive, affective and psychomotor are very much open to interpretation, which is why the classification of the researcher and thus also the validity of the research is strengthened by the participation of a highly experienced sociologist and pedagogue in the review stage of each classification.

The occupational competences and attitudes of small business owner-managers in light of the underlying theories presented bear a remarkable similarity to those expressed by them personally. Might it be possible, as an outcome of this exploration into the core of the professional skill sets of the small business owner-managers, to suggest that the information obtained from small business owner-managers might be new and different? My intention was to raise the idea that a different, DACUM method of studying entrepreneurial competences and attitudes could bring up those skill sets required today that small business owner-managers must have. The findings shed additional light on what is needed to generate knowledge for the purposes of entrepreneurship education and training, entrepreneurship research, advisory services for entrepreneurs and business management. Tacit knowledge was also traced through both entrepreneurs' utterances and the elements of psychomotor skills. The research only further underscored the magnitude of the problem of knowledge loss in enterprises unless steps are taken to actively record such the knowledge.

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Economic Thinking and Risk Attitudes: An Empirical Study

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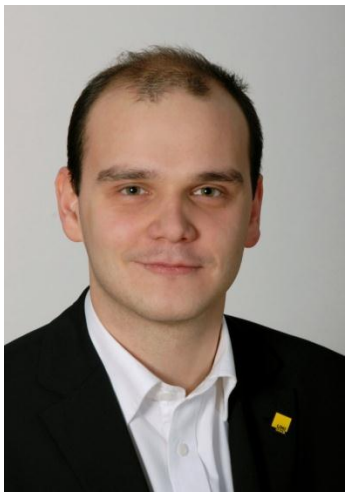

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Abstract

In the light of the current economic crisis, which had its roots in high risk dealings in the international financial markets, the question how economically minded students are and what propensity towards risk they have, are essential to improving their financial literacy. In a broad survey including economic and non-economic schools 649 students aged 14 and 18 were questioned. In this paper results are presented and implications for classroom teaching and curricular development are derived.

Introduction

The world economy suffered from a severe blow to one of its foundations: the financial system. Issues in mortgage markets and subsequently the lack of trust between financial institutions led to a crisis, similar to the Great Depression of 80 years ago. Due to the openness of the global economy the financial turbulence that originated in the US spread around the world and affected almost every other nation worldwide. Irresponsible and high risk mortgage granting of some financial institutions, the viral contagion of foreign economies and the real effects on employment, production and federal budgets

once again make clear the necessity of solid financial and economic literacy. Every citizen in a democracy has to be able to take care of his or her financial affairs and needs a basic understanding of certain basic financial concepts. Examples of these concepts can be the mechanism of supply and demand and the trade-off between risk and return. In order to become financially literate an individual needs to be taught how highly complex economic systems work. This amongst other things is a task educators have to perform.

In this paper results from a study that was conducted in Graz, Austria, Europe in April 2009 are presented. Subjects were asked to complete a standardized questionnaire covering the above-mentioned topics of economics and risk. The Austrian Education System splits students at the age of 14 into several groups. Those students going through to the Matura or Reifeprüfung are able to choose between Secondary Academic Schools and Vocational and Educational (or VET) Schools (Bmukk, 2009a). Within the group of VET Schools, there are specialized schools covering economic topics. Those schools are referred to as economic schools. The abundance of schools not – or only marginally – covering economic topics are referred to as non-economic schools.

The remainder of the paper proceeds as follows. Section 1 gives a short introduction into the relevant literature. Section 2 introduces the study design. Section 3 presents the questionnaire used. Section 4 discusses the hypotheses and covers the study's results. Section 5 concludes and derives implications for business education.

Literature Review

The two basic research concepts of this study – economic thinking and risk attitudes – have been addressed before. Economic understanding belongs to a group of concepts used to describe entrepreneurial qualities. Within the literature (Faltin & Ripsas & Zimmer, 1998; Fueglistaller & Mueller & Volery, 2008; Bmukk, 2009) there are plenty of definitions for economic understanding reaching from entrepreneurship education to entrepreneurial competence to economic action. In the following an overview of those different aspects of economic understanding as well as a short description of each aforementioned concept is given.

Entrepreneurship education in the broader sense contains all educational measures necessary to develop entrepreneurial spirit and skills, leading to the formation of certain values, mindsets, and personal qualifications. Within an educational context, entrepreneurship education means teaching economic thinking (Bmukk, 2009). Entrepreneurial competence is the capability to realize ideas and visions. To achieve this creativity, innovative thinking and a certain degree of risk appetite are necessary. Furthermore, economic competence simplifies everyday life. Entrepreneurial competence is the foundation for the special skills entrepreneurs need to found a successful business (Commission of the European Community, 2005). Economic action results out of the human necessity to optimally manage limited resources. Human needs are unlimited, their available resources on the other hand are very limited. This disparity necessitates economic action (Homann & Suchanek, 2000). Due to the ongoing financial crisis, these definitions were not chosen and instead economic understanding was defined as understanding of how the economy functions.

The second basic research concept – risk taking attitudes – has been a concern of (financial) economists for a very long time. Von Neumann and Morgenstern (1953) were the first researchers to put economic behaviour onto solid scientific foundations. They argued that each individual has a

unique utility function. A utility function sums up all consumption decisions of an individual and transforms it into utility units. Although it is very hard – probably impossible – to accurately identify an individual's utility function it is possible to analyze its general shape. Typically humans prefer more to less. The more money a person owns the more utility this wealth creates. After having satisfied their basic needs the marginal utility of an additional wealth unit decreases – the millionth dollar is worth less than the first dollar. This leads to a concave overall shape of the utility function. This abstract concept of a concave utility function also represents a risk-averse individual. Such individuals include risk into their decision making process.

In addition to risk aversion, there are also the notions of risk neutrality and risk appetite (Copeland & Weston & Shastri, 2005; Lengwiler, 2006). In this study, this classical von Neumann & Morgenstern (1953) approach of modelling individual decision-making was utilized. The rivalling prospect theory by Tversky and Kahnemann (1992), which includes perception into the decision-making process, is a promising alternative but was rejected to limit the already high complexity of the study.

Study Design

The objectives for this survey were derived from two main questions: 1) How economically minded are adolescents? and 2) What is their attitude towards financial risks?

This survey has been conducted among 9th and 12th grade students in 32 classes in eight schools in Graz, Austria, from April to May 2009. In this survey, 649 students from different schools were asked to complete the questionnaire. The questionnaire consisted of 34 multiple choice questions. In the following, a short outline of the Austrian Education System is given. Within this framework the school types that participated in this study are displayed.

Education in Austria is compulsory for every child with permanent residence in Austria. It begins with primary school at the age of six and is fulfilled after the completion of the ninth year of school at the age of about fifteen. After four years of primary education in primary school, pupils can choose to attend either regular secondary school for four years, or secondary academic school for eight years. The latter is separated into a compulsory four year lower level, and a voluntary four-year upper level. About 30% of the pupils choose the secondary academic school, which entitles one to enter the higher education sector (university) after passing the final matriculation exam. Another option to enter the higher education sector is the technical and career vocational schools and colleges (VET colleges and VET schools). These types of schools focus on academical and technical skills and knowledge, providing a combination of both, which results in a workforce-oriented education. There are different types of VET colleges such as business, technique, or tourism and hospitality (North-South Centre, 2006). Another option after finishing the the ninth year of school is the apprenticeship training. Apprentices have to complete a predefined amount of company-based training and have to attend a part-time vocational school. Thus, apprenticeship training is also referred to as dual vocational training system or as dual system (Bmukk, 2009b).

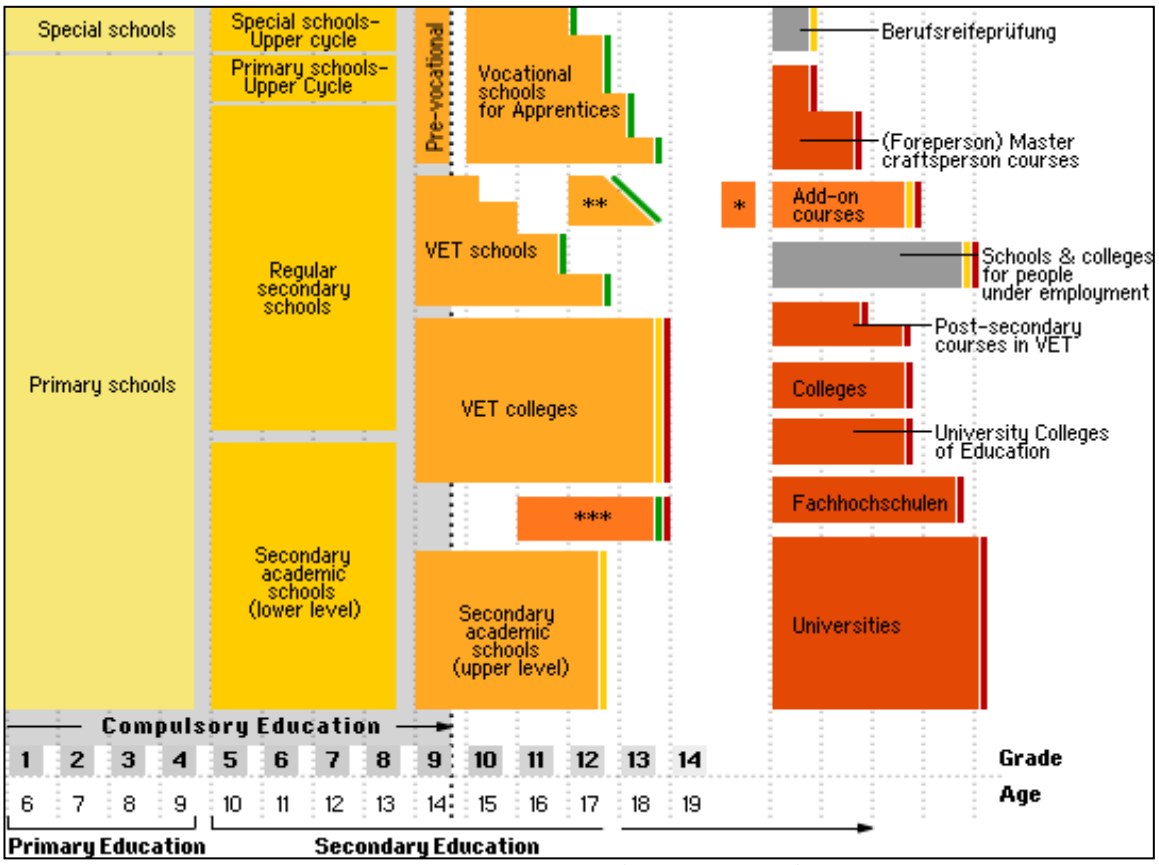

Figure 1. Austrian Education System (Euroguidance 2009)

Four school types have been chosen for this survey. Two from the economic, and two from a non-economic sector. All of these schools culminate in a matriculation or diploma exam. The success completion of this exam entitles students to admission to university.

Questionnaire

The following section provides a summary and selected content of the questionnaire. (A comprehensive presentation of all answer options is omitted due to space constraints).

Demographic Data

Pupils were asked to indicate their sex, age, their mother's profession, their father's profession, their own professional experience, and their native tongue. Pupils were also asked to state their reason for attending this particular type of school.

Economic Understanding

This section contained questions about the principle of supply and demand, exports and imports, customs duties, the government budget deficit, exchange rates and their impact on private individuals and companies, and the comparison of discounts and inflation with regard to their impact on income and insolvency. These questions were designed to guarantee comprehensibility for all pupils regardless of school type. Factual questions about accounting records or accountancy rules were therefore avoided as they would have privileged pupils of economic schools. Figure 2 shows an exemplary question:

If your mother's income rises by 50% and the prices of the goods she buys rise by 70%, this means that your mother	
☐	can buy more goods than before.
☐	can buy the same amount of goods as before.
☐	can buy fewer goods than before.
☐	No idea.

Figure 2. Inflation

The questions about economic understanding were subsequently amalgamated into a sum index. It should be noted that the concept of economic understanding is difficult to measure and can only be partly covered by the selected questions.

Risk Attitudes

In this section, pupils were asked about their risk assessment and risk-bearing attitudes. Questions concerning risk-bearing attitudes dealt with various scenarios in which pupils were asked what proportion of a specified capital they would invest in a risky but highly rewarding return opportunity and what proportion they would rather set aside for a safe, but less rewarding alternative. Two further scenarios dealt with situations under uncertainty. In these cases all amounts of possible returns and losses were known, but not their probability. In order to investigate risk assessment, pupils were asked to assess the risk involved in various scenarios (lotteries).

Hypotheses

One of the objectives of this study was to investigate causalities between economic understanding and risk attitudes of students from economic and non-economic schools. One would expect students graduating from economic schools to have a better understanding of issues regarding the economy than students from non-economic schools. This notion brings us to Hypothesis 1:

H1: Students attending economic schools have a better understanding of economic issues than students of non-economic schools

This surprisingly is not the case. Within the study, several measures were used to compare the different student groups. The measure for economic understanding indicated that students from non-economic schools have more understanding of economics than those from economic schools. The results for risk attitudes remained mostly inconclusive. In total, students from non-economic schools scored significantly higher (16.61) than students from economic schools (16.03). So H1 had to be rejected.

The second hypothesis is intended to connect economic understanding to risk awareness. Individuals, who understand the incremental structure of risky situations – hence have good economic understanding – tend to assess risk stronger in their decision-making process. As a result, they perceive the negative consequences associated with risk more clearly than individuals with less economic understanding. A rather extreme example of this behavior would be a statistician avoiding the roulette table because he knows his (very slim) chances. Hypothesis 2 therefore is:

H2: Students with a better understanding of economic issues tend to be more risk-aware (Risk assessment)

Again this hypothesis has to be rejected. Individuals with a high score on economic behavior tend to be less risk aware (Pearson Correlation coefficients: -0.130 and -0.069 for both Risk-Awareness Items). Apart from risk awareness, risk-bearing attitudes play an important role in the financial decision-making process. To continue the above example, it is not unthinkable to see statisticians gambling in a casino. That person knows his chances (high economic understanding) and is yet willing to gamble. Individuals with a low degree of economic understanding do not understand the incremental structure of the situation they are in and refuse to get involved. Therefore:

H3: Students with a better understanding of economic issues tend to be less risk-averse. (Risk-bearing attitude)

The study's results support this notion (Pearson correlation coefficients: 0.110 and 0.128 between economic understanding and both risk bearing attitude items). Taken together H1, H2 and H3 implicitly contain hypotheses 4 and 5:

H4: There are differences in risk assessment depending on school type.

H5: There are differences in risk-bearing attitudes depending on school type.

Again the study delivers evidence supporting H4. For situations of relatively small risks, there are significant differences between school types. In riskier situations, this difference vanishes. For H5, the evidence is mostly inconclusive, which is due to the difficulties encountered during the assessment of risk-bearing attitudes.

Implications

The following recommendations for the area of economic understanding can be derived from our study:

- Economic schools should not merely focus on teaching techniques: Individual subjects (such as Business Administration and Accounting) have to be integrated more strongly in order to convey the bigger picture.
- In its function as a fundamental principle of economics and prerequisite for understanding economic contexts, mathematics has to be better integrated into the curriculum.
- Education – business education in particular – should be less focused on factual knowledge and more oriented on a person´s competence to be able to solve problems self-dependently according to a given situation.

To conclude, the study has shown interesting results, but also raised some questions. These issues shall be further investigated in a follow-up study, which will contain questions designed to better measure economic understanding by placing pupils in decisive situations modeled as close to reality as possible and having a closer look at the motives for pupils' individual decisions.

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