ISSN 2164-2877 (print)
ISSN 2164-2885 (online)

Competence-Oriented Instruction in Vocational Education in Austria: An Empirical Comparison between Two Instructional Approaches

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Abstract

A distinct feature of the Austrian education system is its differentiation of programs in vocational education. Among these programs, the dual education system has a long tradition: Students undergo an apprenticeship in a company while also attending a vocational school in part-time. More than other forms of education, this combination of on-the-job training at the work place and instruction in vocational school requires constant adaptation to economic requirements.
Against this background, a new instructional approach, so called areas of learning with a focus on competence were introduced in the vocational school Eisenstadt in the year 2010. The introduction of this approach offered an opportunity for comparing it with a "traditional" subject-oriented approach. Results of the comparison will be presented and discussed in this article.

Evaluation of different instructional approaches

In the year 2010, a new instructional approach was introduced in the vocational school of Eisenstadt (Austria). Vocational education for apprentices was restructured according to the approach of areas of learning with a focus on competence-oriented instruction. In this approach, learning contents are structured such that they reflect work processes and not traditional subjects.
This approach was evaluated by a comparison of instruction in three schools: The vocational school in Eisenstadt which had introduced the former approach and two other vocational schools in Styria which still employ a subject-oriented approach.

ISSN 2164-2877 (print)
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Formally, the evaluation followed the CIPP model (Stufflebeam, 2002) which considers *c*ontexts, *i*nputs, *p*rocesses and *p*roducts. A special focus lay on the comparison of the two instructional approaches. Following the perspective of instruction as an interaction in which different stakeholders are involved, students, teachers, principals, and students' trainers at the work place were asked to take part in the evaluation. Data collection was based on a multi-method approach, applying different research methods such as interviews, surveys, and performance assessment in order to achieve a higher validity of findings.

The following questions will be addressed in this paper:

1. How do teachers in the two instructional approaches experience the organisation of their work?
2. How do teachers with and without experiences in the two approaches assess them?
3. Do students' achievements differ in the two approaches?

Competence-oriented instruction and instruction according to areas of learning

SCHEWIOR-POPP describes areas of learning as "areas of application designed for educational purposes, based on didactic considerations" (2005, p. 7). The areas of learning concept involve the transformation of traditional school subjects and disciplines into a cross-curricular approach as it organizes learning contents into comprehensive tasks and problems as they are carried out in the workplace or in daily life situations (Ertl & Sloane, 2004). This transformation is the main difference from the subject based approach. The traditional subjects are no longer the starting point for teaching. Examples of areas of learning in the first year of commercial education would be "presentation of goods" or "conversations with customers". This means that, first, areas of learning represent a curricular and not an instructional approach. In this approach, learning objectives describe competencies that students are required to develop.

ISSN 2164-2877 (print)
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Figure 1: The relationship between areas of application, areas of learning, and learning situations

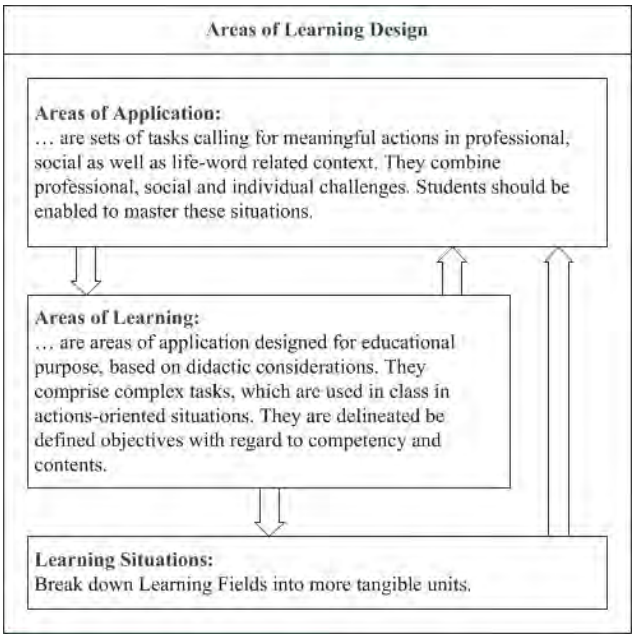

Figure 1. Areas of Learning Design. Graphic from Schewior-Popp (2005, p. 7).

The organization of the curricula in accordance with areas of learning demands activity-oriented learning and teaching arrangements. It assumes that all pupils come to school with resources for understanding, finding, and trying out solutions. In these kinds of learning and teaching arrangements, the role of the teacher changes to a team-worker and to a facilitator of learning who encourages self-regulated learning processes. In the context of vocational education, competences and areas of learning are regarded as parts of a concept aimed at the "promotion of the learner's personal development with a view to the social responsibilities associated with education on the one hand, and employability on the other." (Schewior-Popp, 2005, p, 8). Areas of learning replace instruction in which contents are structured by a traditional view of subjects.

Vocational education within a dual education system (i.e., pupils undergo an apprenticeship in a company and attend school) has a long tradition in the German speaking countries (Austria, Germany, Switzerland). The past few years have seen vocational schools having to undergo significant reforms of their school organization and the German speaking countries have chosen different paths. In Germany, reforms involved the implementation of the "areas of learning" approach as a top-down process from the federal education ministries to schools. Curricula had to be changed and organized into "areas of learning" (KMK, 2004; Rebmann, Schloemer, Berding, Luttenberger & Paechter, in press). Yet, a scientific investigation of that approach had been neglected.

In Austria, different vocational schools introduced the "areas of learning" approach on their own. This offered an excellent occasion for empirical investigations of the approach because schools which apply the "areas of learning" approach could be compared to schools which apply a subject-oriented approach. The present study, therefore, has also a strong international impact because it takes up research questions which concerns basically all countries with a vocational dual education system.

ISSN 2164-2877 (print)
ISSN 2164-2885 (online)

Based on the principle of action competence and current curricula, the vocational school Eisenstadt developed a systematic description of areas of learning, topics, competences to be acquired, and, partially, specific learning assignments for its various training courses (cf. Fenz, 2012). The areas of learning describe superordinate topics (e.g., basics of retail). A special characteristic of the school's instructional concept is the consequent combination of areas of learning with a competence-oriented approach of teaching. At the time of the survey, the vocational school Eisenstadt offered training courses which rely completely on areas of learning as well as subject-oriented instruction and courses which employ a combination of both approaches.

Evaluation design

Three schools took part in the evaluation: The vocational school in Eisenstadt which, a few years ago employed a subject-oriented approach, and two other schools which still employ a subject-oriented approach.

In the evaluation, different stakeholders were questioned. The present article focuses on teachers' assessments, students' assessments, and students' achievements. Altogether, 62 teachers (among them 29 from Eisenstadt) filled in a questionnaire on the two instructional approaches. Approximately 1,000 students filled in two questionnaires on their school experiences at two points in time. A subset of 550 students, namely those in vocational training for retailers and clerks, took part in tests on their vocational knowledge. Furthermore, 952 students took part in tests on their social skills needed at the work-place. The tests had been designed as mini-case studies in which students have to solve a work-related problem.

Research Method

The questionnaire for the teachers was design based on different, already validated items. In this article, only some results can be presented based on the items shown in Table 1.

Table 1
Part of the teacher questionnaire

Topic	Items
Climate in class and school	• Perception of social bonding (Prenzel et al., 1996), QIBB (Paechter & Mayringer, 2006)
Cooperation	• Teacher cooperation (development of teaching), Cooperation in the special field (Asseburg et al., 2009) • Positive social climate (staff) (Ditton & Merz, 2000) • Satisfaction with the colleagues (BM:BWK, 2004)
Areas of Learning/ Competence orientation	• General questions about the areas of earning (Tramm et al., 2009); Professional stress (Ditton & Merz, 2000) • Self-development

Students' vocational knowledge was assessed by different performance tests. Assessments could only be carried out for students in training courses for retailers and clerks (the largest subsample of

ISSN 2164-2877 (print)
ISSN 2164-2885 (online)

students). Separate assessments were developed for each school year of the three-year long courses. The assessment for the first year included tasks on the comparison of offers, invoice components, and payment transactions; the assessment for the second year dealt with tasks on debt collection and insufficient fulfillment of purchase contracts; the assessment for the third year included tasks on purchase contracts, calculation, marketing, and customer complaints. Altogether, eight tests were developed (three for school year 1 and 3, two for school year 2). All assessments covered essential learning contents of the training programs which had to be taught in all three schools participating in the study. The tests were graded so that students could achieve a maximum of six points.

Students were allowed to use all materials available to them (e.g. textbooks, calculators). Tests were to be completed within 60 minutes.

The test for the vocational knowledge had been developed by two experts in the field with a degree in business education. In order to test face validity, the tasks were assessed by another expert to determine whether the tasks represent the learning contents of the curriculum, whether they are appropriate for the respective age group and educational level, and whether they are suitable to an areas of learning approach. A similar approach of assessing face validity had been employed for the evaluation of case studies for the assessment of social competences.

Students' social skills were also assessed by mini-case studies. Here, standardized tests were used (Paechter, Kreisler, Luttenberger, Macher & Zug, 2014). In the tasks, conflict scenarios had to be solved by students. Students then had to answer the following questions:

- "A team colleague who mostly is reluctant to support you expects your support in a work task that is relevant for her/him. What kind of behaviour would you consider appropriate in dealing with this colleague?"
- "A colleague offends you. She/he claims that you are not capable of doing your job without the help of others. You know from your own work experience that this accusation is not appropriate. What kind of behaviour would you consider appropriate in dealing with this colleague?"

Results

Research question 1: How do teachers in the two instructional approaches experience the organisation of their work?

Teachers in both instructional approaches assessed relevant work processes mainly involving team work (compare Figure 2).

Differences can be found, for instance, with regard to the perception of the social climate at the school (areas of learning M = 5,14 [M = Mean]; subject-oriented approach M = 4,12). Teachers in the areas-of-learning approach (M = 2,21) also indicate higher satisfaction with opportunities to talk about their subject with colleagues than teachers in the subject-oriented approach (M = 2,76).

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However, when interpreting the results one should keep in mind that a better social climate might be an outcome of the areas-of-learning approach as well as a requirement for the introduction of the approach.

Figure 2: Assessment of teamwork among teachers

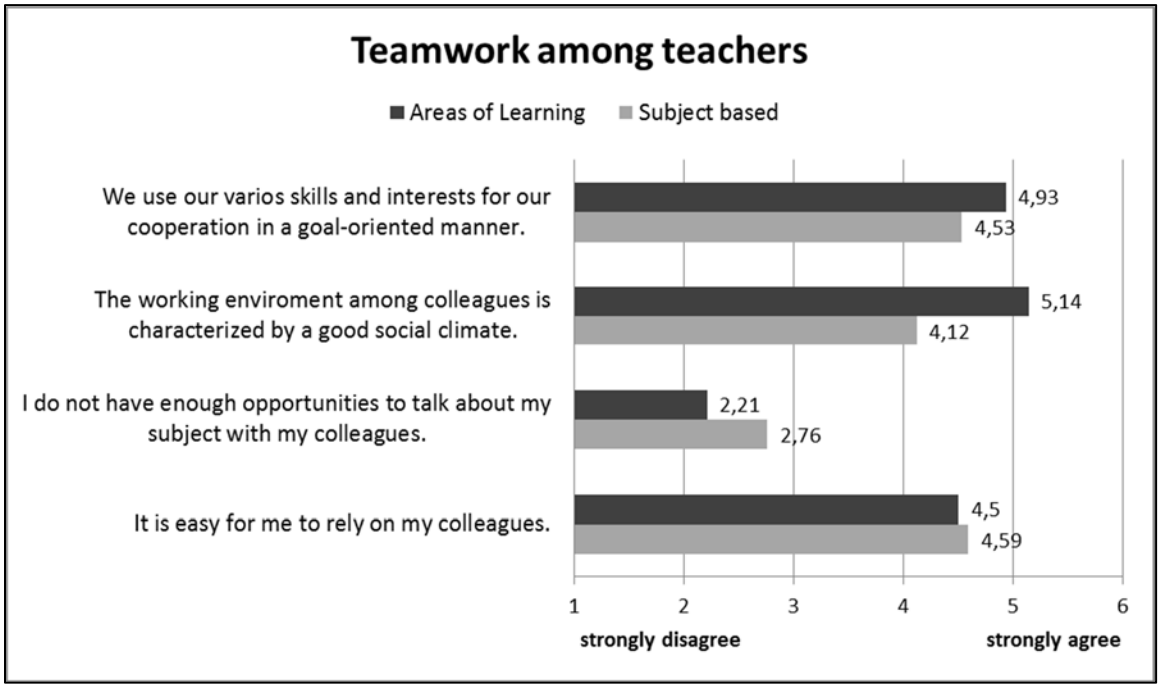

Figure 2. Teamwork among teachers

Research question 2: How do teachers with and without experiences in the two approaches assess these approaches?

All teachers participating in the study were asked to assess various aspects of team work among teachers in an areas-of-learning and in a subject-oriented instructional approach. This means, that teachers from the vocational school in Eisenstadt assessed their actual experiences in the areas-of-learning approach (AREAS of LEARNING about AREAS of LEARNING) and their previous experiences in a subject-oriented approach (AREAS of LEARNING about Subject based) as all of them had encountered the latter approach in their profession. Teachers from the two other schools assessed their actual experiences when evaluating teamwork in the subject-oriented approach (Subject based about Subject based) and their assumptions on teaching in an areas-of-learning approach (Subject based about AREAS of LEARNING) as they had no experiences with the latter approach.
All items were formulated such that the teachers were assessed on a rating scale ranging from 1 (very rarely) to 6 (very often) regarding how often certain forms of cooperation among teachers can be applied in an instructional approach.

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ISSN 2164-2885 (online)

Figure 3: Assessment of team work in the two approaches

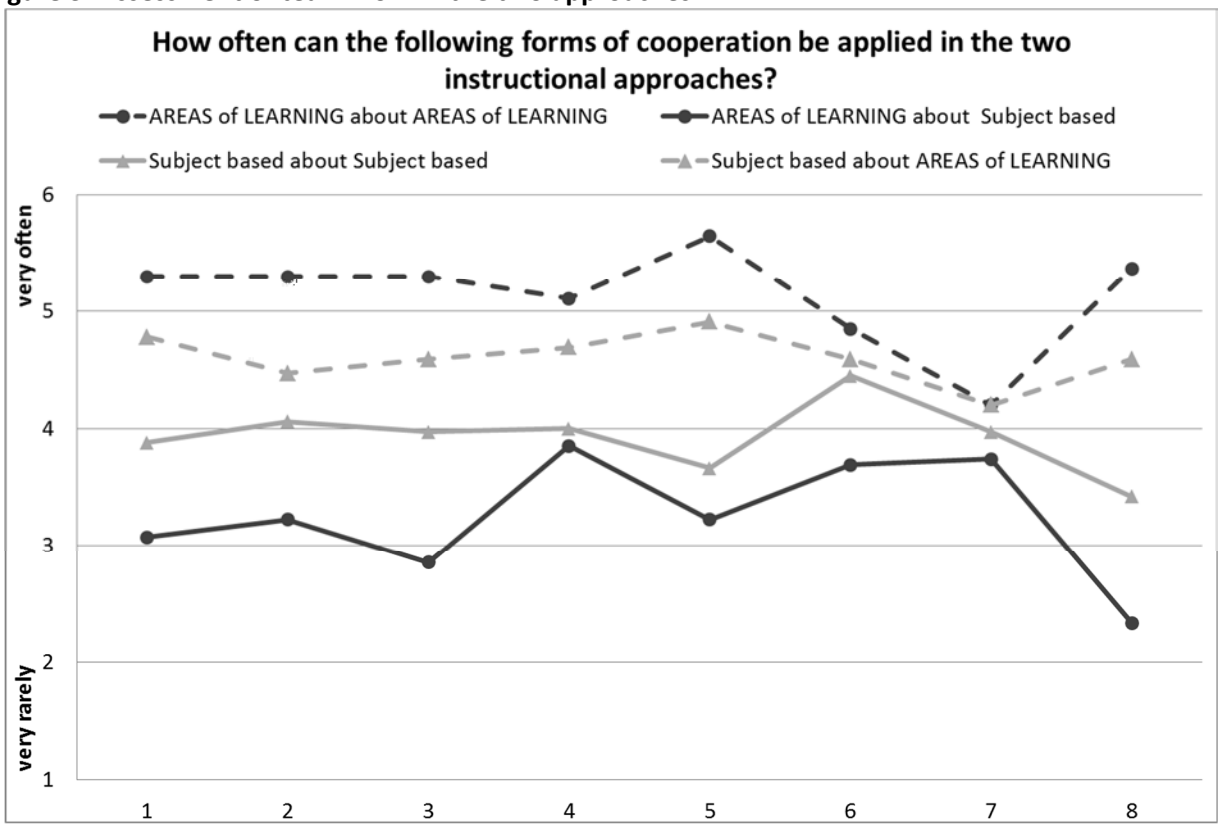

Figure 3. Forms of cooperation

(1) Mutual agreement about the learning objectives
(2) Development of instructional material and exams
(3) Instruction planning
(4) Teaching and projects
(5) Cross-curricular teaching and learning
(6) Discussing student performance among teachers
(7) Further education and training for the teachers
(8) Team teaching

The results show that both groups of teachers associate an areas-of-learning approach with a higher degree of teamwork among teachers. The contrast between the assessments of both instructional approaches is highest for teachers who use an areas-of-learning approach (and who have experiences with both approaches). They strongly emphasize the possibilities for teamwork in this instructional approach.

In a similar fashion, teachers were asked to which degree both instructional approaches are able to foster favourable learning achievements (ranging from action competence to social/personal competences). Again, all teachers were asked to assess both instructional approaches.

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Figure 4: Fostering different learning and behavioural achievements in the two approaches

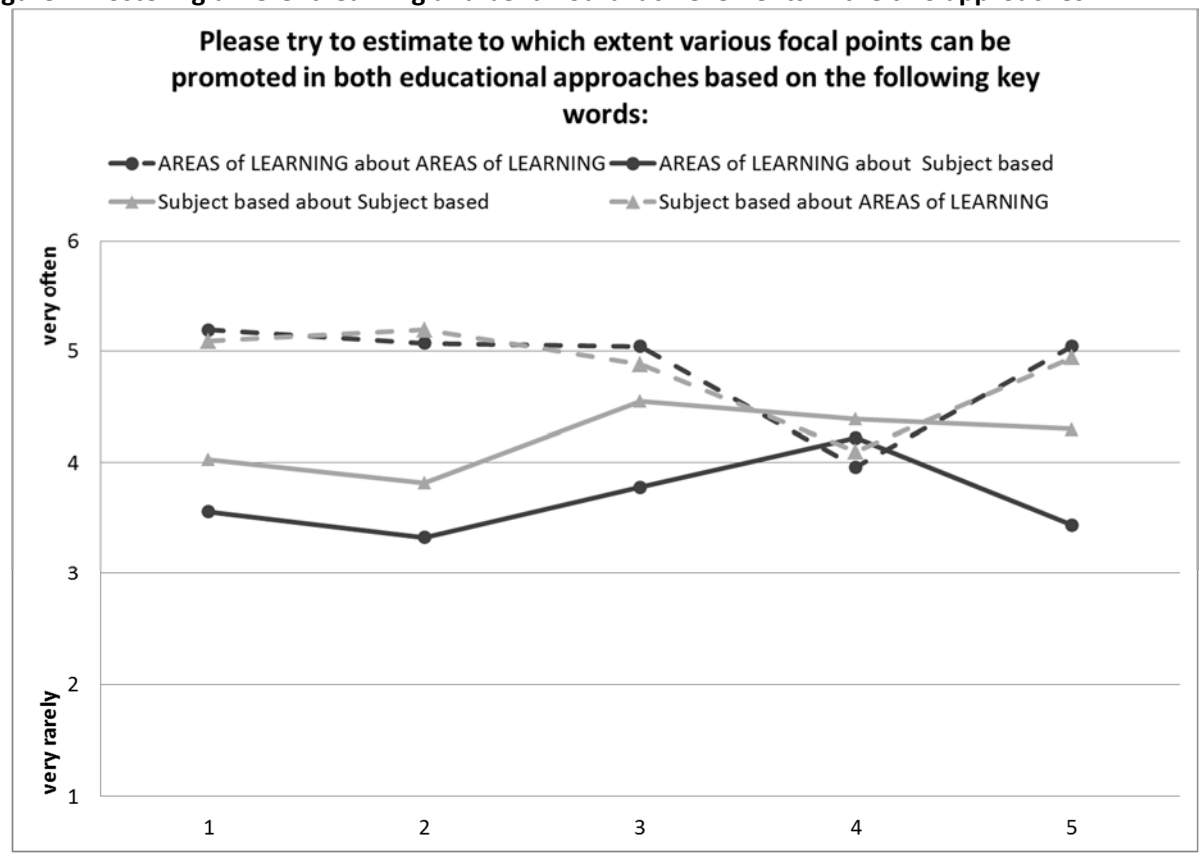

Figure 4. Comparing the different learning and behavioural achievements in the two approaches.

(1) Foster students' professional action competence
(2) Foster interrelated knowledge of contents
(3) Train professional problem-solving
(4) Foster disciplined behavior
(5) Foster social und personal competences

The results show that both groups of teachers associate an areas-of-learning approach with higher student achievements regarding professional action competence, interrelated knowledge of contents, problem-solving, as well as social and personal competences. They see no differences between the two approaches when it comes to encouraging disciplined behaviour. These results show, on the one side, the actual experiences of those teachers who already apply a competence-based areas-of-learning approach and, on the other side, the expectations of teachers who still apply a subject-oriented approach.

Finally, teachers assessed to which degree an areas-of-learning approach implies positive or negative consequences for students, teachers, and the school as such. Figure 5 shows the assessments of the two groups of teachers. Altogether, all teachers regard an areas-of-learning approach as a suitable means to achieve a higher quality of instruction and of school quality. They, however, emphasize that this

ISSN 2164-2877 (print)
ISSN 2164-2885 (online)

approach poses higher demands on students. Negative implications such as lower transparency of learning objectives for students may occur but are not considered as alarming.

Figure 5: Implications of an areas-of-learning approach

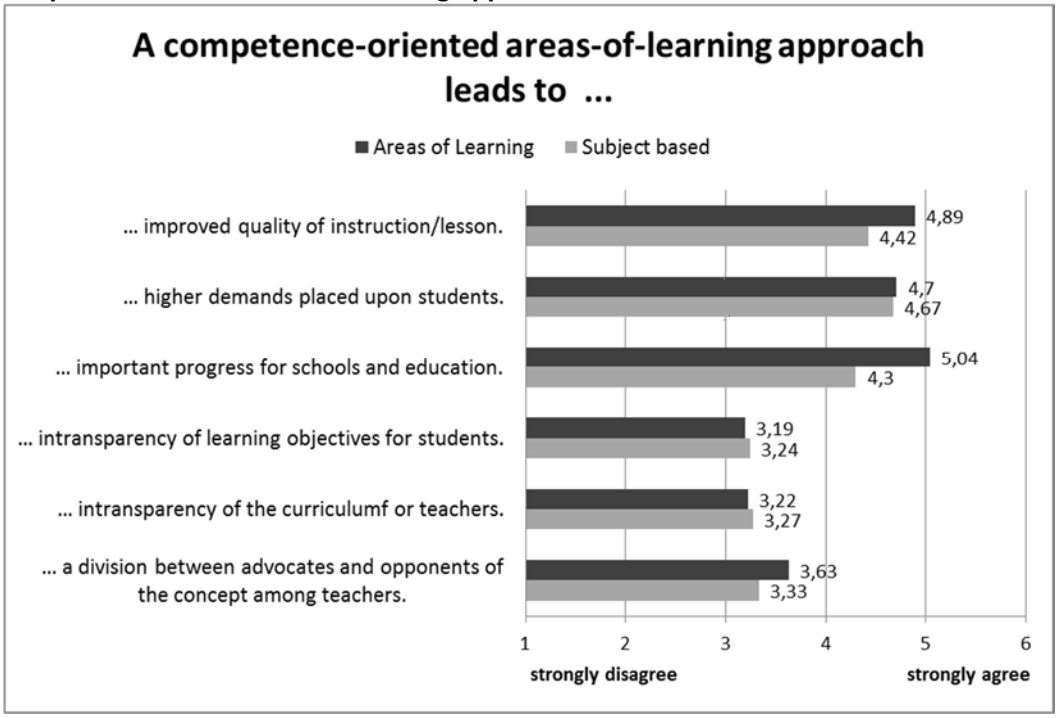

Figure 5. Implications for teaching

Research question 3: Do students' achievements differ in the two approaches?

Figure 6 shows the comparison of the average scores achieved in the two instructional approaches. Overall, two tests showed differences between the approaches: a mini-case study concerned with debt collection (assessment 2.1.) and a mini case study concerned with supplier relations (assessment 3.1.). The debt collection task was the task with the highest degree of complexity in all assessments. Students had to consider interdependencies and come up with decisions that needed consideration of all interdependencies.

The case study on supplier relations was insofar challenging as the description of the case was accompanied by a large amount of information irrelevant to the task solution. Students had to distinguish between information necessary and information unnecessary for the task solution. The final completion of the task itself was comparatively less demanding (writing a business letter).
In both assessments, students in the competence-oriented areas-of-learning approach showed higher achievements than students in the subject-oriented approach.

ISSN 2164-2877 (print)
ISSN 2164-2885 (online)

Figure 6: Comparison of students' achievements in professional knowledge in the two approaches

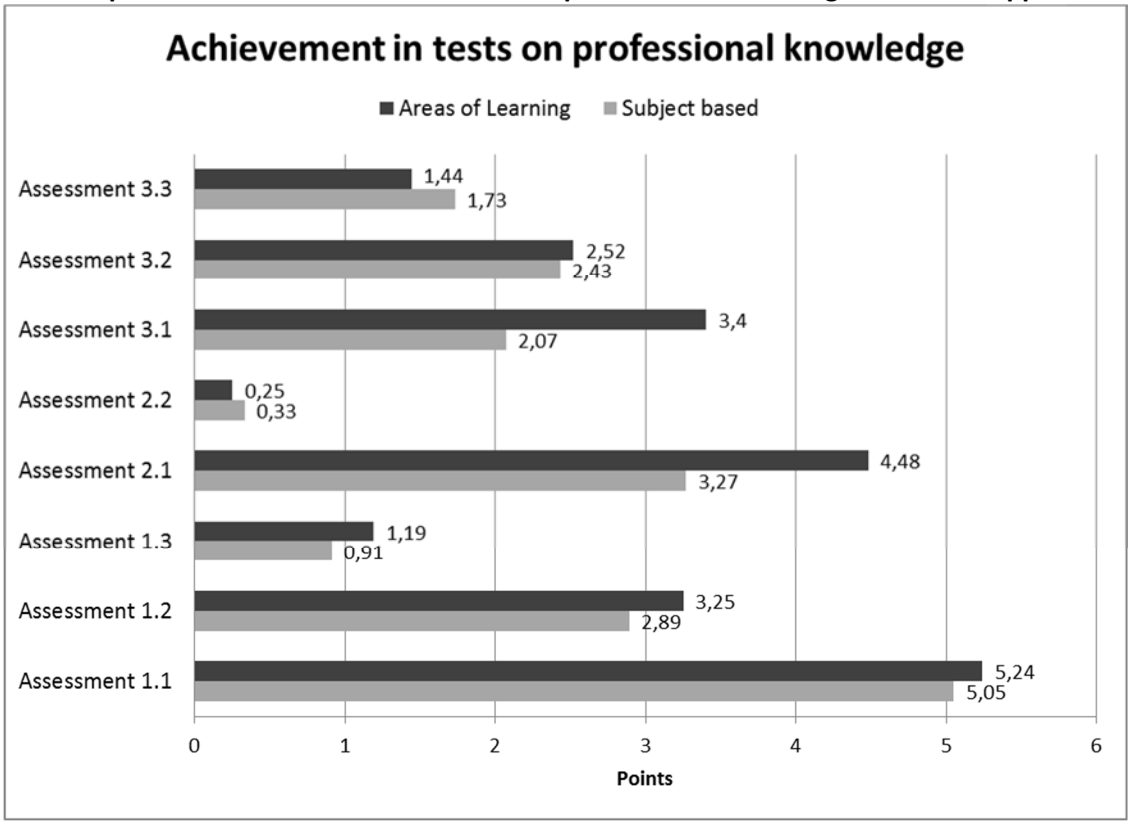

Figure 6. Differences in achievement

The last result presented in this paper is the results of the test for the students´ social skills, assessed by mini-case studies. The total amount of points to be achieved was six. Subject oriented students achieved a better average (Mean value M=4,47) than learning field oriented students (M=3,76).

First implications of the study

When asked about actual work experiences, teachers in the vocational school Eisenstadt report a distinct culture of team work and various opportunities for team work in their school. Team work seems to occur more often in an areas-of-learning approach.

In the assessments of all teachers, an areas-of-learning approach is strongly connected with working together, ranging from joint decisions of learning objectives to team teaching, than a subject-oriented approach. Teachers in the areas-of-learning approach see various opportunities for implementing different forms of cooperation. Teachers in the subject-oriented approach largely agree with this view. Moreover, there is a remarkably high level of agreement among both groups of teachers regarding the high potential of an areas-of-learning approach in terms of competence-oriented instruction.

Altogether, all teachers evaluate areas of learning positively. Both groups of teachers see advantages in the areas-of-learning approach and regard it as a general improvement over the subject-oriented approach. They, however, also emphasize the higher demands on students.

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ISSN 2164-2885 (online)

The tests on professional knowledge indicate better student achievements in the areas-of-learning approach when it comes to complex tasks as they are also carried out in the work place. However, this instructional approach does not necessarily imply higher achievements in social skills. The slightly worse achievements in social-skills tasks emphasizes that social skills cannot be acquired as a by-product of a modern instructional approach but require reflection and practice on the students' side.

Based on this study, a number of questions arise for further research. Team work seems to be a crucial part for the teachers in an areas-of-learning approach. How to improve team work (benefits, motivation, etc.) within the college is an important question. The tests on professional knowledge give some hints, that the areas-of-learning approach can strengthen the competence of the students. It remains to be seen whether the students are able to show these competences in their working life.

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ISSN 2164-2877 (print)
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The authors wish to thank the Austrian Ministry for Education and Females and the European Social Fund (ESF) for the funding of this project.