Teradata University Network: Creating Opportunities for Teaching Leadership in Emerging Business Disciplines

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Abstract. Teaching and learning in emerging business disciplines, such as business intelligence, open brand new challenges created by fast changing content and even faster changing technologies. The main objectives of this paper are: (i) to describe the challenges of teaching and learning in an emerging discipline (ii) to further extend an existing theoretical model of teacher’s professional development, to capture the next stage of teaching leadership required by emerging disciplines (iii) to describe a case study of a real-life learning community called Teradata University Network and (iv) to critically analyse teacher’s role in order to identify the key aspects of teaching leadership, made possible by this community.

Keywords. Business Intelligence, Learning Communities, Reflective Practice

1. Introduction

During the last two decades, university teachers have experienced many powerful changes in their teaching practices and the underlying educational theories. While it is impossible to provide a brief, yet all inclusive, overview of all major educational developments, this section will focus on some major paradigm shifts that have fundamentally changed the role of university teachers (i.e. lectures, professors or instructors). The main objective is to motivate the need for different type of teaching leadership that is required, but also made possible by the emerging business disciplines.

The first paradigm shift occurred from the transmissive mode of teaching, centred around teachers and didactic delivery of information, to student-centred learning. It happened when educators started to recognise that there was a wide gap between what teachers teach in the classroom and what students actually learn. Consequently, they started to put more emphasis on learning. As Biggs pointed out: “It is helpful to remember that what the student does is actually more important in determining what is learned than what the teacher does” [1]. However, this powerful statement, that came to symbolise the shift to student learning, is often misinterpreted to undermine good teaching. While in fact, student-centered learning should be about high-quality teaching that results in high-quality learning. The key element is the feedback loop that goes from the learners back to their teachers to make sure that learning activities are effective. While expert teaching certainly includes mastery of a variety of teaching techniques, but unless learning takes place, they have not achieved their purpose [2].

During 90s, as more and more universities started to adopt student-centered approach to learning, thanks to new educational technologies, slowly but surely another change started to occur. To provide more flexibility and to take full advantage of various web-based educational technologies, many universities started to adopt different versions of e-learning ranging from very simple content-based applications to highly engaging environments designed for individual as well as collaborative learning. Therefore the underlying educational models also range from the online versions of the transmissive model that often results in student disengagement [3], to very sophisticated applications of the socio-constructivist model of learning that enables student engagement never before possible. However, looking from the teacher’s perspective, regardless of the underlying educational model (transmissive or more active individual or collaborative learning), elearning often reduces teacher’s role to being a facilitator of online learning. While in more established teaching disciplines, this mode of teacher’s engagement could be highly appropriate, experience shows
that in emerging disciplines, teachers need to take a different, more active role.

This paper argues that teaching in emergent disciplines require implementation of learning communities [4] that are highly dependent on teacher’s leadership role. These are communities that focus on the learning process through the concept of shared responsibilities for the success of the overall learning experience, measured by the level of attainment of the intended learning objectives. Although learning communities are typically associated with online environment and elearning, this paper adopts a much broader view to include all stakeholders in the learning process, even industry partners.

Compared to the more established teaching disciplines where learning communities may be an option, in the case of emerging, fast changing teaching disciplines these extended communities become an essential educational model. They are made possible by the synergistic value-adding activities of all stakeholders that may have different, yet complementary goals.

The main objectives of this paper are: (i) to describe challenges of teaching and learning in an emerging discipline of BI in order to motivate the need for synergistic learning communities and a new type of teaching leadership (ii) to further extend an existing theoretical model of teacher’s professional development to capture this new role (iii) to describe a case study of a real-life community called Teradata University Network and illustrate its main value-adding activities and (iv) to critically analyse teacher’s role in this community in order to identify and better describe the key aspects of teaching leadership, made possible by this community.

2. Theoretical background

Every paradigm shift, as described in the previous section, has created new expectations for teacher’s role in the learning experience of their students. For example, the transmissive model of teaching places the teacher in the center of the learning experience. Their main role is to present the content. Then, in the student-centered model of learning, teachers become “guides on the side”. Then in flexible learning environments, this role turns into elearning facilitators. We argue that learning communities again shift the focus back teachers, providing them with new opportunities to develop into community leaders.

Before we introduce this more active, yet very different role, it is important to consider how teachers develop throughout their career. According to Kugel [5] there are five distinct Stages (or “ages”), teachers go through during their experience in higher education today, regardless of their teaching discipline:

- **Stage 1 – Focus on Self**
  At the start of their teaching career Kugel suggests, teachers are mainly concerned with themselves, and more specifically with their survival in front of their first few classes. Once they know they “can survive” they are ready to shift their focus away from themselves.

- **Stage 2 – Focus on Subject**
  Here teachers rediscover their enthusiasm for the subject and aim to extend their knowledge related to course content. However, as they start to notice that students are not learning everything they teach, they start to shift their focus from content to students.

- **Stage 3 – Focus on Student**
  At this stage, teachers start to acknowledge student diversity, in terms of their interests, approaches to learning, motivation, different levels of prior knowledge and experience as well as different learning objectives. Gradually, teachers start to adopt a wider variety of approaches to engage their diverse class.

- **Stage 4 – Focus on Student learning**
  At this stage, teachers increasingly create more and more appropriate student activities. The more actively students engage with their work, the more responsibility they take for their own learning. Gradually, they start to change from active to independent learners.

- **Stage 5 – Focus on the Student as an Independent Learner**
  Finally, teachers focus on strategies that will prepare students for long-life learning, so they can become fully independent learners. This is where teacher’s job ends according to Kugel.

It is obvious that Kugel’s model focuses on the teacher’s perspective. However, it is also important to take into account different stages of student development as learners. Just because a teacher is in stage 3, it does not mean that all students will develop from active to independent learners. This is a very long and complex process.
that takes more than one subject, semester and even more than one teacher to accomplish.

If one is to analyse Kugel’s model of professional development in the context of previously described teaching paradigms, it is possible to observe that different stages appear to be more suitable for some, while less suitable for the other educational models. For example, Stage 3-5 teachers are more likely to provide better support in student-centered learning environments than Stage 1 or 2 teachers. Stage 2, teachers, with their focus on content, are likely to be well placed in flexible learning environments, where the main emphasis is on content delivery.

However, none of the described stages focus on learning communities and the associated responsibilities for teaching leadership. Therefore, in this paper we propose Stage 6, with the main focus on learning community and different type of teaching leadership. While Stage 6 may or may not be appropriate for more established teaching disciplines, we argue that it is crucial for the emerging disciplines, as described in the following section.

3. Teaching in the emerging disciplines

Teaching in any discipline involves numerous challenges. In addition to the common ones, such as setting up learning objectives, selection of the most appropriate teaching and learning resources, design of learning activities and assessment of students’ learning, each discipline also has domain-specific challenges. The main objective of this section is to analyse the main challenges of teaching in an emerging discipline, in order to motivate the need for complex learning communities and a different type of teaching leadership. While the initial emphasis was on strategic decisions, in recent times, operational BI incorporates decision making at all organizational levels, enabled by better integration of BI with operational business processes.

Compared to the long-established business disciplines such as for example, accounting and finance, the “renewed” field of BI opens brand new challenges for university teaching and learning, for all stakeholders involved. On one side, there is a world-wide shortage of professionals in this field and this trend is likely to continue in the future. Thus, industry urgently requires graduates that are capable not only to use the existing frameworks and methods, but to continue to advance current organizational BI practices, long after they leave universities. In fact, “the biggest barrier to BI deployment is a lack of user skills and knowledge of best practices” [7]. In other words, to keep up with dynamic changes in this discipline, organizations need BI professionals, who are reflective practitioners capable to engage in workplace-based action learning, using their own accumulated experience.

At the same time, to teach future reflective practitioners, BI teachers need to be the reflective practitioners themselves in two different disciplines (education and BI), to ensure that their teaching methods continue to co-evolve with industry practices. In other
words, it is not sufficient to focus solely on the content and the current versions of BI tools, as both have very short half-life. It is even more important to focus on the underlying principles and frameworks and, along the way, help students to develop their problem solving, critical thinking and even design and creativity skills in this context. The ultimate goal should be to help students to develop a “road map” of useful frameworks and methods along with their “map navigational skills”. Only in this way students will continue to develop as reflective practitioners even when new content and technologies become available in the future.

Compared to the other more established disciplines, dynamic nature of BI makes this ongoing process of design and improvement of teaching practices much more challenging, due to the very short action learning cycles that teachers need to engage in. Consequently, knowledge sharing among BI teachers and cross-university communities of teaching practitioners become very important.

To ensure that the evolving teaching practices are effective, in terms of the intended learning objectives, they also need to be evaluated in different educational settings with different groups of students. Again, in more dynamic discipline such as BI, this is practically impossible for any teacher to do on their own.

To make sure students have access to the latest developments in BI industry, these learning communities also need to involve industry partners. But their mode of engagement has to be fundamentally different from the existing commercial alliances and industry/academic boards, where they play mainly an advisory role or are vendors of software solutions.

We argue that teachers’ and industry practitioners’ roles need to become complementary. In fact, it is very unlikely that industry practitioners are also Stage 3 teachers, able to recognize different learning needs and then design the most effective learning activities to achieve the intended learning objectives. As Ericsson et al. [8] observed, development of expertise requires time but even more importantly, it requires teacher’s expertise for development of the most appropriate and effective educational methods.

We argue that synergistic learning communities provide an effective environment for education of the future reflective practitioners because the individual goals of various stakeholders, although different, are fully aligned and value-add is created though synergy of their activities. While all stakeholders are important, only teachers could take the leadership role.

The following section offers a case study of a real life learning community for teaching and learning in BI. This case study will be used to support the above arguments related to the synergistic relationships of all stakeholders and the need for teaching leadership.

5. A motivating case: Teradata University Network

This section describes a real-life example of a synergistic BI learning community called Teradata University Network (TUN). Currently, TUN supports more than 1,000 academic members from over 600 universities in more than 30 countries [9]. In essence TUN is a free learning portal that provides learning and teaching resources with the main objective to support the world-wide community of academic users “to teach, learn about, and connect with others in the fields of data warehousing, DSS/BI and database”. [9].

All activities of this virtual community (including maintenance of the TUN web site) are sponsored by the Tearadata company and various resources are provided by a number of leading BI companies that are in some cases, even direct competitors. On the industry side, this community includes vendors and developers of various BI applications, their customers (e.g. organisations currently using their solutions) as well as various industry analysts and thought leaders. In terms of their contribution, industry members provide up-to-date case studies describing their BI-related applications, problems and solutions. They also provide tools and applications to be used in the classroom. Some vendors even give access to on-line training tools to students, free of charge for educational purposes.

From the university side, this community includes university teachers who are currently teaching BI/DW/DB-related courses and/or are engaged in applied research (e.g. case studies) with some of the partner organisations. The academic version of the TUN enables teachers to access and use different resources including activities, various assessment items and even very large data sets. Most importantly, teachers can use TUN to share their tried and tested practices with other community members and thus, learn from and with them. This knowledge
sharing aspect is crucial for further advancement of the best teaching practices in this field. Most importantly, compared to other industry-sponsored portals, in the case of TUN, leading academics, rather than solution vendors are primarily responsible for the ongoing evolution of this community.

Based on the above description of the main stakeholders and their activities, it is possible to observe that TUN is, indeed, an example of a synergistic learning community because there is value-added for all members involved. Teradata and other industry partners are increasing brand awareness and thought leadership, students acquire leading edge skills, employers receive better graduates and professors are more effective [9]. The following section explores the teacher’s perspective in order to illustrate how synergistic learning communities are gradually reshaping and redefining their role, creating new opportunities for teaching leadership that do not exist in the other educational models.

6. Discussion and reflection

This section provides author’s reflection and analysis of the changing role of a university teacher in a learning community such as TUN. Its main objective is to use the case example to identify the main characteristics of Stage 6 teacher, with the special emphasis on their leadership responsibilities. These characteristics have been identified and refined through several cycles of action learning, based on the hands-on experience with TUN resources and active participation in this community.

First of all, it is important to observe that complex learning environments such as TUN, in spite of the wealth of learning resources provided, are not going to transform Stage 1 to Stage 6 teacher overnight. The same way they cannot change students from highly dependent into independent learners. In fact, in spite of all resources provided, teachers could continue to practice the transmissive model of teaching and students could continue to “consume” the content as in the traditional environment.

Furthermore, not all teachers need to be in Stage 6, in order to benefit from this environment. All stages could benefit from the exchange of ideas and learning resources with more experienced practitioners. This also means that not all TUN academic users will be ready to lead learning communities. However, if they choose to do so, we argue that this learning environment provides quite unique opportunities for their professional development. For example, leaders will continue to emerge through collaboration and shared responsibility for several key components:

- Responsibility for advancing professional knowledge, both disciplinary and discipline-specific education while looking for better ways to educate reflective practitioners
- Responsibility for maintaining and enhancing synergistic activities of all members to ensure that community continues to evolve.

Learning communities can only continue to grow only if they continue to create value for all stakeholders involved. While in the traditional online learning environment the concept of value is often attributed to, and associated with, educational resources, synergistic learning environments such as TUN offer much more than a content repository. In addition to the “up-to-the-minute” content, including free tools and data sets, it provides a rich set of professional relationships and knowledge management processes, all creating opportunities for a very different type of professional development.

Most importantly, the concept of learning communities, as described above, enables teachers to focus on a most creative part of teaching and learning process, that is design of new teaching and learning strategies that will help their students to achieve the intended learning goals and meet the needs of industry partners. This is something that industry members cannot easily provide. While they can provide the up-to-date content, tools, resources and even on-line training tools, they don’t normally have the expertise to decide how to use these resources effectively to make sure students do acquire the required set of skills.

In addition to curriculum design, another very important aspect of student learning is related to evaluation of different teaching methods by using formal, rigorous scientific methods. Again, this is something that industry partners are not very likely to provide simply because their training courses typically focus on acquisition of very specific product-related skills. For example, the same learning resource could be used in many different ways to encourage different types of learning e.g. acquisition of fundamental concepts, experiential knowledge, applied knowledge and even creativity. This is where teacher’s skills, acquired while they were going through stages 3-5, become critical. By the time they are ready to transition to Stage 6, they
should have the expertise to develop the most appropriate activities for a particular group of students, using the most appropriate resources provided by the industry-based members.

This is why we argue that learning communities enables industry and university partners to form synergistic relationships where each side provides complementary skills and expertise.

Finally, learning communities of this nature provide opportunities for creative collaborative wisdom and knowledge sharing across university and university-industry boundaries. Even though the current version of TUN encourages knowledge-sharing, we are yet to explore the full potential of collective-wisdom in action. This includes opportunities for collaborative research among different users of TUN with possible contributions in different areas such as knowledge management, educational technologies, virtual communities, elearning as well as educational theory for this particular environment and teaching discipline. Future possibilities could also include collaborative learning activities among students from different universities enabling them to experience all benefits of learning in multi-cultural, global environments.

6. Conclusion and future work

The main objective of this paper was to explore complex, synergistic learning communities as a possible educational model for teaching and learning in emerging disciplines, such as business intelligence. The paper argues that these communities create unique opportunities for teaching leadership that do not exist in any other educational model.

New opportunities will continue to emerge as teachers and industry partners continue to combine their creative ideas. It is also expected that these learning communities will continue to change the role of university teachers in many different ways, yet to be seen and explored. But right now, by assuming the leadership role, Stage 6 teachers are creating unique opportunities to influence and even define the future of their teaching discipline, leading their students by their own example.

7. References