

An Activity Theory Approach to Analyze Barriers to a Virtual Management Information Systems (MIS) Curriculum

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Abstract

This paper explains how the activity theory is used as a framework to analyze the barriers to a virtual Management Information Stream (MIS) Curriculum in Jordanian schools, from both the sociocultural and pedagogical perspectives. Taking the activity system as a unit of analysis, this study documents the processes by which activities shape and are shaped by their different levels of context. Through qualitative data collection methodologies, the study explored the various contextual and personal imbalances that appeared while implementing the MIS at schools. At the end of the study, several suggestions and recommendation are offered to enhance the curriculum and its implementation at schools.

Over the past few years, several large-scale international studies have documented the successful integration of information and communication technologies (ICT) in schools (e.g. Mann, Shakeshaft, Becker, & Kottkamp, 1999; Sivin-Kachala, 1998; Wenglinsky, 1998). The introduction of ICT has changed lives, organizations, strategies and discourse in communities around the world (Grunberg & Summers, 1992; Wright, 1987). Either acting as a Trojan Horse (Olson, 1988), as a catalyst (Hawkrige, Joworosky & McMahan, 1990; McDonald & Ingvarson, 1997) or, more recently, as a lever — a tool that must be applied purposefully to a task to be of value — (Venezky, 2002). In the education sphere, enthusiasm abounds over how computers and the Internet can bring improvement in numerous ways. Whelan (2008) states that ICT radically affects school practices, distance education, and government and public sector policies. Due to its potential to renovate education, ICT continues to be widely recognized, countries all over the world have identified the momentous role of ICT in improving education (Hennessy, Ruthven, & Brindley, 2005; Goodison, 2003; Kangro & Kangro, 2004; Kozma & Anderson, 2002).

Therefore, countries have invested heavily in increasing the number of computers in schools and in the networking of classrooms (Pelgrum, 2001). In fact, schools have started to restructure their education curriculums and classroom facilities in order to decrease the teaching and learning technology gap between today and the future. This process of restructuring demands

efficient integration of ICT into existing context in order to supply learners with knowledge of specific subject areas, to encourage meaningful learning and to improve professional productivity (Tomei, 2005). As a result, various educational ICT curricula have been initiated, strategies have been developed, hardware has been obtained, and software has been designed.

As a response to the widespread interest in integrating ICT to improve the curriculum, pedagogy, assessment, teacher development and other aspects of the schools' culture (Roshelle, Pea, Hoadley, Gordin, & Means, 2000), Jordan has been implementing a major effort to substantially enhance the quality of school learning contexts, as well as to improve the equity of its results (Al-Jaghoub & Westrup, 2003; Qablan, Abuloum, & Abu Al-Ruz, 2009). The major components of Jordan's ICT-based reform are: to reorient the education system policy objectives and strategy through governance and administrative reform, to restructure and realign the education curricula and practices to achieve relevant learning outcomes, to achieve a universal basic education through cost effective measures, and to promote readiness for learning through early childhood education (Ministry of Education, 2003).

Management Information Stream (MIS) was among the first curriculum that the Jordan's Ministry of Education (MoE) has reoriented. The MIS curriculum consists of six subjects: basics of management, management information systems, computerized accounting, business statistics, computer curriculum, and e-commerce. The new MIS-Online curriculum was created through the trans-disciplinary integration of the six subjects into semester-long projects that are organized according to the business life cycle. First semester students create business ideas and plans, and second semester students learn to run their businesses using performance management tools and information systems. Among the computer applications they use are, an accounting software called *ITAC* and an online e-commerce application entitled *Dokkaneh*. By the end of the first year, MIS students learn how to manage their businesses and how to evaluate their performance based on system-generated information and key performance indicators.

What is MIS-Online?

MIS-Online is a dynamic and interactive set of 26 e-Learning modules that were developed by experts, practitioners, and educators to enhance the teaching and learning of six Management Information (MI) Stream courses. Presently, about 380 public schools in Jordan offer the MI Stream to their students. This dynamic online learning curriculum supplements the Ministry's existing MIS curricula, textbooks, and other teacher resources, and it supports teachers' efforts to improve the teaching of MIS.

The MIS-Online's interactive modules use multiple media, multiple means of interactive learning, and multiple delivery mechanisms to create a rich and relevant learning experience. MIS-Online is delivered through *EduWave* online platform and is designed to simulate real-world challenges (within the context of the six MIS subjects) that companies and governmental organizations face while carrying out their work in a knowledge-based economy. MIS-Online closely links the e-Learning modules with businesses in the private sector to reflect real life experiences.

The Origin of MIS-Online

The Ministry of Education's MI Stream is a new field of study for high school students. The Ministry's vision is to prepare youth for work in Jordan's emerging knowledge economy. This vision seeks to ensure that graduates from secondary schools have profitable skills for work in Jordan's growing information technology sector and other areas of the economy requiring use

of ICTs. The new MI Stream has been integrated into grades 11 and 12 and replaced the Commercial Education stream that was part of Jordan's vocational education curriculum. It is worth mentioning that the MIS stream requires students to take three core courses: Computerized Accounting, Management of Information Systems, and Basics of Management. Students may also select from three elective courses: Computer Curriculum, E-Commerce, and Business Statistics.

The current grades 11 and 12 MI Stream curriculum consists of six textbooks, one for each subject, to be used by teachers and students. The textbooks were developed quickly as a temporary solution when launching the new stream. Therefore, the MoE has to develop a more comprehensive curriculum. Fortunately, this has been done as part of *ERfKE* national reform project. Guided by *ERfKE*'s goals, the textbooks were reviewed and rewritten. Staff from the Youth Technology and Careers (YTC) component of the USAID-Jordan-funded *ERfKE* Support Project (ESP) worked with MoE staff to enhance the MI Stream curriculum, develop e-Learning modules, and train MI Stream teachers to improve the teaching and learning of the six MI Stream subjects. The newly developed e-Learning modules formed the skeleton of a new curriculum, called "MIS-Online."

The Project-Based Learning (PBL) Methodology of MIS-Online

The development of the textbook enhancement framework along with the extraction of the content strands by the subject matter experts and the curriculum division contributed to efforts by the YTC team to identify common themes on which project based learning approach and e-Learning modules could be developed. In the workshop, carried out by the YTC team, six main integration themes were identified for the six textbooks including: basic concepts, planning, organization, communication, control and decision-making. Twenty MIS textbook authors mapped the strands for the six MIS subjects and aligned the strands in a scope and sequence chart that highlights potential integration between these subjects. These themes, along with more effective textbooks, helped to build capacity among MIS teachers, teaching them to adopt more student-centered approaches in their teaching.

Each MIS-Online module was designed around the project based learning (PBL) approach. Each module is intended to guide the student through the process of carrying out a learning project that demonstrates the students' knowledge and skills needed to accomplish the specified tasks.

A Need for the Study

The MIS-online curriculum is currently in its experimental stage. Eleven schools were chosen to experiment the curriculum. However, before wide spreading it out to all other schools in the country, the MIS-Online curriculum needed to be evaluated. In their evaluative study, Jaradat and Qablan (2010) indicate that most MIS-Online teachers, school supervisors, and students emphasized the positive impact of the curriculum on students' learning. However, their study did not indicate the sort of pedagogical and contextual impediments that surround the implementation of the MIS-Online curriculum. This study comes to explore how effective a group of MIS teachers, school supervisors, students, curriculum developers, and MoE curriculum supervisors felt the MIS-Online curriculum to be as a pedagogical tool and what impediments they experienced when attempting to utilize it. The goal was to gain an in-depth understanding of implementing the curriculum in the context of the school (Patton, 1985) and to gain an

understanding of the meaning that those participants had about implementing the curriculum (Glesne, 1999).

Research Questions

This study tried to answer the following questions:

1. What are the internal and external contradictions within and among the activity systems of MIS-Online curriculum?
2. How do MIS-Online teachers, school supervisors, students, MoE curriculum supervisors, and curriculum developers view the resolution of these contradictions?

To address these questions, a sound theoretical perspective that has the capability to look in depth at both the personal and contextual factors was adopted. Activity theory (AT) appeared to be a plausible theoretical perspective that includes both the personal and contextual factors as well as the interplay between these multiple factors.

Theoretical Framework of the Study

The nature of this situational study's objectives and research questions require analyzing larger multilayered contexts (i.e., MoE goals, schools' environments and administration, students and teachers, etc.) that surround and interfere with the implementation of the MIS-Online curriculum in schools. It is possible to build a detailed account of what the students have done to make the activities of the MIS-Online curriculum successful, how the activities are supported by these multilayered contexts, the goals of implementing it in schools, the content of the curriculum and how it satisfies the students' needs, the delivery mechanisms of its content, and the performance of its users as well as problems they encounter. This is particularly critical to educational research where the object of its inquiry is not simply knowledge, but usable knowledge. That is, education research should be "responsive to the current or emerging needs of practitioners and ultimately to the solution of professional and social problems" (Richey, 1998, p.7).

Since the activities of MIS-Online curriculum involve several stakeholders, activity theory is used to analyze different levels of interactions within the activity system (MIS-Online). The following passages explain the merit of using this theory in conducting such a situational analysis.

Activity Theory

Education researchers are beginning to shift their attention away from the analytic study of single learning variables and focusing on the whole configuration of events, activities, contents, and interpersonal processes taking place in the context that ICT is used (Cole, 1995; Fichtner, 1999; Salomon, 1993). This means "the characteristics of a part are largely determined by the whole to which it belongs and by its particular location in the whole system" (Diesing, 1972, p. 137–138). For example, a particular observation of the use of MIS-Online contents is understood and interpreted in reference to a larger background, and in turn, it provides a general account of the background that can illuminate the particular observed action. However, to keep sight of the totality while examining the particular levels of phenomena is a formidable task (Wertsch, 1985).

In order to deal with this task, the activity theory framework will be adopted to demonstrate the intimate mechanisms that link MIS-Online curriculum to its surrounding settings. Activity theory has been successfully used to analyze successes, failures and imbalances

in complex situations without reductionist simplifications (e.g. Engeström & Escalante, 1996; Miettinen, 1998). In essence, activity theory proposes that activities consist of processes both at the individual and social level, including the mediational tools and artifacts that link the processes together. These tools may include the MIS-Online, which mediates work functions among members of the learning environment.

Using activity theory as the theoretical framework provides important insights into the process of integrating the MIS-Online curriculum in Jordan's schools. Firstly, it provides a conceptual map to the major loci among which human cognition is distributed in the learning environment, with MIS-Online curriculum as one of the mediating tools. Secondly, it includes other people who must be taken into account simultaneously with the subject as constituents of the activity system. Thirdly, institutionalized activities are driven by something more robust and enduring than an individual, goal-directed activity, making analysis less problematic. A collective object-oriented activity system is the prime unit of analysis for activity theory (Cole & Engeström, 1993; Engeström, 1987; Leont'ev, 1981). And fourthly, it considers the history and developmental phases of the curriculum. That is, activity system as a unit of analysis "represents some historically identifiable ideal-typical qualitative pattern or constellation of its components and inner relations" (Engeström, 1993, p. 69).

An activity system as a unit of analysis allows one to observe the actual processes by which activities shape and are reshaped by their context. The idea of activity system is represented with an expanded version of the classical mediational triangle that is constructed by Cole and Engeström (1993). A model of an activity system is presented in Figure 1.

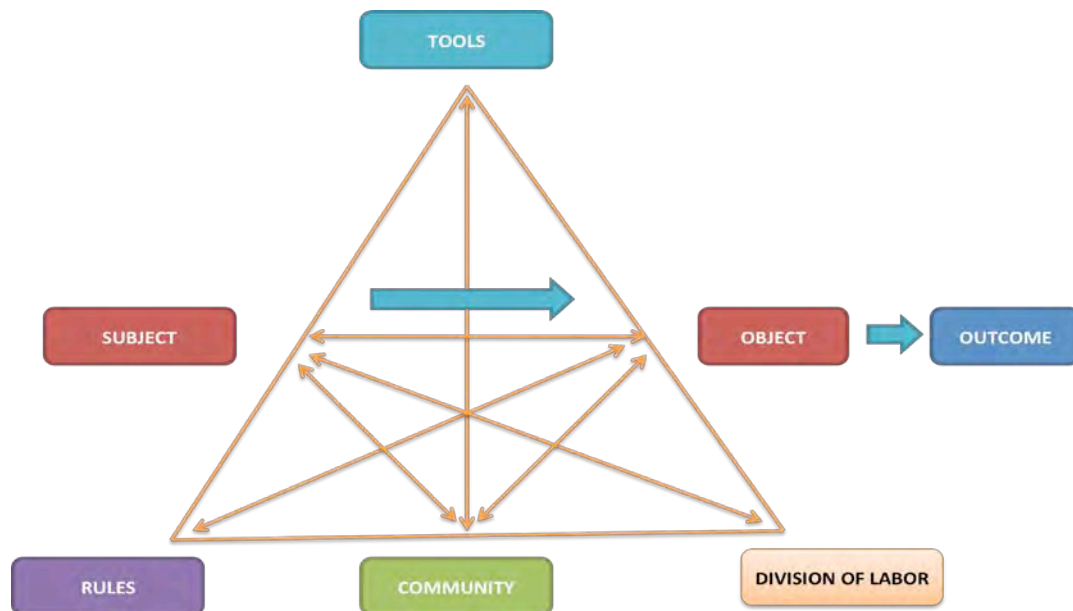


Figure 1. The mediational structure of an activity system.

The activity of the subject is directed towards the object that is then "molded and transformed into outcomes with the help of physical and symbolic external and internal tools (mediating instruments and signs)" (Engeström, 1993, p. 67). The tools through which the subject interacts with the world are dependent on his/her object in the activity system, and this shapes his/her interpretation of the tools.

The subject exists in a community comprising other individuals and subgroups that share the same general object. In the community, there is division of labor (DOL) with the “continuously negotiated distribution of tasks, powers, and responsibilities among the participants of the activity system” (Cole & Engeström, 1993, p. 7). The relationships between the subject and community are mediated by the community’s collection of mediating tools and rules; where rules are “the explicit and implicit regulations, norms and conventions that constrain actions and interactions within the activity system” (Engeström, 1993, p. 67).

The model of activity system is dynamic; there are continuous constructions and re-constructions between its components. For example, there is ongoing negotiation and reformulation of rules by the subject rather than the subject abiding by fixed rules. The tools are continuously reconstructed or new tools developed by both the subject and his/her community to meet the object of the activity system. The division of labor is always in the process of redefinition and refinement by the subject and his/her community. Even the object is constantly in transition and under construction, and “it manifests itself in different forms for different participants and at different moments of the activity” (Hasu & Engeström, 2002, p. 4).

Internal and External Imbalances Within and Between Activity Systems

The activity systems in the MIS-Online curriculum integration are not necessarily stable and harmonious. They are characterized by imbalances—within and between activity systems—in the integration process. Imbalances are developmentally significant and exist in the form of resistance to achieving the goals of the intended activity and as emerging dilemmas, disturbances, and dis-coordinations (Engeström, 1999). The primary inner-imbalances exist in each component of the activity system, whereas the secondary inner-imbalances appear between the components of the system (where an activity system is connected to other activity systems through all of its components) (Hasu & Engeström, 2002).

For example, a primary imbalance exists when a teacher, who has to effectively manage the class to achieve the intended object of facilitating the construction of students’ knowledge, becomes overtaken with classroom management as the object because behaviors are difficult to manage. When the tools of the MIS-Online curriculum are introduced into the lesson, this primary imbalance may worsen because teachers have to manage more resources and possibly monitor students more closely as learner control increases. There is a constant latent tension between the intended object of engaging students in higher order thinking and the object of managing the class.

On the other hand, secondary inner-imbalances may arise when there is a conflict between different processes in the activity system. For example, the roles assigned to different members of the community in the traditional classroom may conflict with those required in the MIS-Online curriculum-mediated activities. When MIS-Online curriculum's tools such as computer simulations are introduced that require actions of inquiry and exploration from students, a secondary imbalance may appear between tools and DOL, if the DOL is still very much teachers imparting knowledge and students receiving knowledge. That is, the facilitating role of the teachers in the ICT-mediated activities conflicts with their traditional roles of information dispensers and authoritative experts of knowledge and the autonomous learner’s role of students, if the MIS-Online curriculum’s activities conflict with their traditional role of passive receiver of knowledge. In this example, the secondary inner-imbalances arise between the classroom as the subject and the DOL, and between the DOL and the tools. The tools that are used to mediate the activities have changed, but the DOL has remained constant. This imbalance

is depicted with the help of lightning-shaped arrow between the subject and the DOL, and between the DOL and the tools in Figure 2.

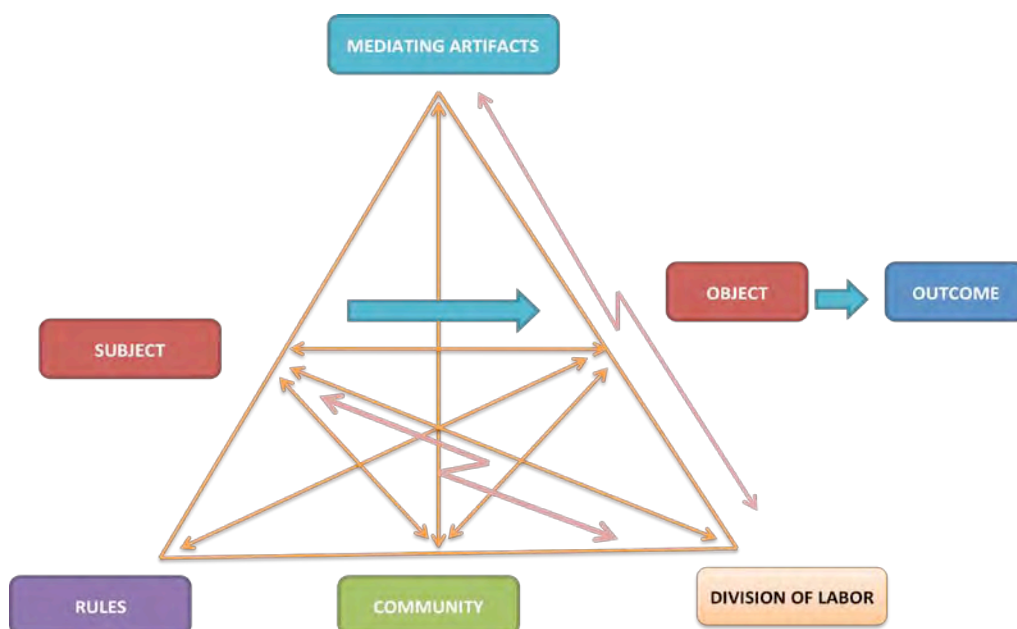


Figure 2. The Secondary inner-imbalance between the subject and DOL (roles), and mediating tools and DOL due to the introduction of ICT.

In addition, external imbalances exist between components of different activity systems. Different activity systems may operate at different levels of the surrounding contexts. In the process of MIS-Online integration, external imbalances may occur between the objects of two activity systems—the classroom and the school. The object of the former may be to develop students' higher order thinking skills that contradicts the object of the latter to achieve number one spot in the school league table (Scribner & Cole, 1981; Tobin, Wu, & Davidson, 1989).

These imbalances and conflicts within and between activity systems may lead to the disturbances and breakdowns in the integration of MIS-Online curriculum that cannot be eliminated or fixed with separate remedies. Although these breakdowns and disturbances within and between activity systems may lead to an overall crisis of the activity system, they may be the moving forces behind changes and development of the system. There may be re-mediation of the overall activity system that helps to resolve the internal and external imbalances (Engeström, 1999).

Operationalizing the Theoretical Framework

To provide a better idea of how the activity theory theoretical framework can be operationalized, the *subjects* of the activity system focused on in this study will be the MIS-Online Product, its content and structure. The *communities* will involve the evaluation of teachers, school supervisors and educator of the effectiveness of MIS-Online, the impact of MIS-Online on student and teachers' performance. The *mediating artifacts* (instruments) represent the

MIS-Online teaching facilities, the use of technology, and the delivery of MIS-Online. The *object* will be MIS-Online to support the overall learning outcomes (knowledge, skills, competencies) of the MI Stream curriculum for grades 11th and 12th, and the *outcome* represents the widespread usage of MIS-Online in all schools across the country. Figure 3 demonstrates the activity system of the MIS-Online curriculum.

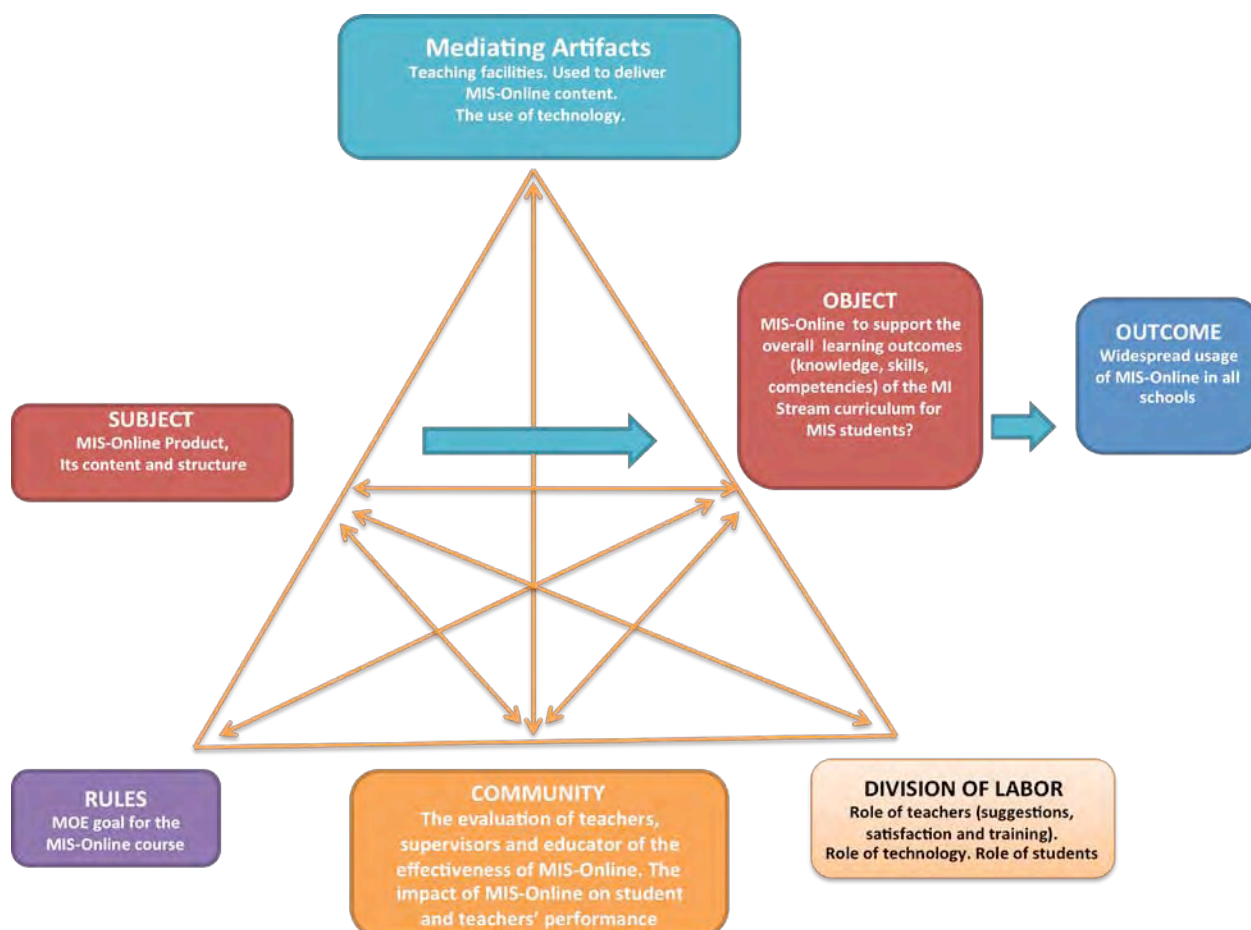


Figure 3. The Activity System of the MIS-Online Curriculum.

Methodology

Because the objective of the study is to gather rich, detailed information reflecting the participants' viewpoints on the sort of internal and external contradictions within and among the activity systems of MIS-Online curriculum and how its users resolve these contradictions, a qualitative research methodology was employed (Bogdan & Biklen, 1998, Glesne, 1999). Because it best answers the questions of what and how, qualitative research was chosen as the methodology for this study. Taylor and Bogdan (1998) described the uniqueness of qualitative research as a pathway to understanding interactions in their context.

In this study, the main source of data was derived from a series of in-depth interviews with MIS-Online teachers, students (11th and 12th graders), school supervisors, MoE curriculum

supervisors, and curriculum developers, which were conducted for the sake of capturing the whole picture of MIS-Online curriculum (Janesick, 2000).

In an attempt to understand the sorts of internal and external contradictions within and among the activity systems of MIS-Online curriculum, more attention was paid to understand the various personal and contextual (i.e., cultural, historical, communal) elements that surround the implementation of this online curriculum in schools. However, in analyzing the data, researchers paid particular attention to how participants in this study viewed the tensions and inconsistencies that inhibited their progress.

Context of the study

This study took place in Jordan, a small country situated at the junction of the Levantine and Arabian areas of the Middle East. Jordan is bordered on the north by Syria, to the east by Iraq, and by Saudi Arabia on the east and south. To the west is Israel and the occupied West Bank. Jordan occupies an area of approximately 96,188 square kilometers including the Dead Sea, making it similar in size to Austria or Portugal.

Research Participants

Nine MIS-Online teachers, seven students, three school supervisors, three MoE curriculum supervisors, and five curriculum developers were randomly chosen to participate in this study. Teachers, students, and school supervisors were chosen from all 11 schools that participate in implementing the curriculum. The curriculum developers were chosen from the company that produced the curriculum as well as from the supervisory commission of the whole project. Table 1 shows the study participants.

Table 1

Study Participants (pseudonyms)

Teachers	Supervisors	Students	Curriculum Developers	MoE Curriculum Supervisors
Isra'a, Manal, Wael, Isra'a, Ashraf, Manal, Amaal, Maisa'a, Sana'a	Saed Fatima Hamzeh	Yasser, Ahmad, Ayman, Khaled, Saleh, Amjad, Omar	Waleed, Mahmoud Samar, Raed, Nabeel	Noha Hashim Oula

Data Collection

Qualitative data collection methodology was employed in this study. Twenty-five semi-structured interviews were conducted with teachers, school supervisors, students, MoE curriculum supervisors, and curriculum developers. The interview questions revolved around the nature of MIS-Online curriculum, the sort of internal and external contradictions within and among the activity systems of the curriculum, and the strategies that users follow to resolve these contradictions. Each interview lasted for 45–60 minutes. All interviews were conducted by the researchers over a two-month period and were digitally recorded and transcribed verbatim for analysis (Bogdan & Biklen, 1998).

Data Analysis

Data collected in this study were categorized using the six elements of Cultural Historical Activity Theory (CHAT); subject, object, outcome, mediating artifacts, rules, community, and division of labor (see Figures 1 and 2). All data within a category were searched for emergent themes that provided provisional information as to relationships among and within the data (Coffey & Atkinson, 1996). That process helped in building connections among the extracted themes, establishing relevant relationships and connections (Miles & Huberman, 2002).

As in any qualitative study, rigor is a major factor that shapes data analysis. To ensure the rigor of the findings in this study, researchers followed Patton's (1990) strategy of triangulation. Patton (1990) recommends considering multiple data sources to support proposed themes. In addition, CHAT itself ensures triangulation by requiring the examination of many facets of a broader activity.

Member checking was another strategy that the researchers used to ensure the rigor of their findings (Glesne, 1999). To do so, the researchers shared the tentative results of their data analysis with three of their colleagues to ensure that the data were analyzed correctly.

Since the language of all collected data was Arabic, all excerpts used in the following case studies were translated into English (Sperber, Devellis, & Boehlecke, 1994) by two bilingual faculty members from the College of Educational Sciences at the Hashemite University. Furthermore, to confirm that the translation process was accurate and reflected the interviewees' meanings, each participant was given his/her written interview transcript, and feedback was considered in correcting any comment from the participants.

Results and Discussion

The analysis of collected data demonstrated a dominantly positive perspective of the utilization of MIS-Online curriculum in schools. All participants emphasized the positive impact of the curriculum on students' learning. Furthermore, they stressed the importance of the MIS-Online curriculum on realizing the foundations of the educational reform toward knowledge economy (*ERfKE*) in Jordan. Without exception, all interviewees expressed their satisfaction of the developed MIS-Online content. As they all indicated, the content was not only prepared in the light of the advanced MoE's educational guidelines of the MI stream but also added to these guidelines various practical learning outcomes.

"The content of the curriculum covered all aspects of the MI stream in Jordan and added to it" (Noha, Hashim, Waleed, Mahmoud, Saed, Isra'a, Manal, & Wael).

"The curriculum was built according to the outcomes sought by the educational designers" (Mahmoud, Samar, Hashim, Saed, & Waleed).

"The curriculum is able to be renewed and updated when required" (Noha, Mahmoud, & Waleed).

Another feature of the developed MIS-Online content was its capability to provide learners with a wide spectrum of skills that originate from the widespread educational reform movement that the MoE has recently adopted (*ERfKE*).

"The curriculum covered a broad spectrum of skills that were suggested by the designers" (Hashim).

Once acquired, these skills enable learners to easily understand and interact with the world of business. Furthermore, this highly developed content will significantly contribute to

solving the national unemployment problem through changing students' negative perspectives and attitudes toward various careers and vocations (overcoming students' shame culture).

"The curriculum highly contributes to help students respect all careers" (Saed, Isra'a, Ashraf, Manal, Fatima, Yasser, Ahmad, & Ayman).

An additional facet of the content of MIS-Online curriculum is its potential to provide students with diverse knowledge from a group of business-related fields (i.e., accounting, administration, marketing, and finance). According to several interviewees, the curriculum was very successful in summarizing several business-related concepts in interactive, students-friendly activities.

"One excellent feature of this curriculum is its ability to melt the borders between various business related areas. It tackles each topic from a different perspectives to equip students with skills and knowledge that prepares them for future" (Oula, Hashim, Amaal, Maisa'a, Yasser, Khaled, & Saleh).

In total, the MIS-Online curriculum is considered as an advance movement toward incorporating information and communication technologies into the process of learning at Jordanian schools. Therefore, it sets the stage to transform other educational curricula into online interactive formats.

Despite all these advancements in the MIS-Online curriculum, there are still some issues (also called contradictions or imbalances) that need to be resolved to complement the success of the curriculum. The following passages will highlight these contradictions and offer some strategies to resolve them.

Exploring Contradictions in the MIS-Online Curriculum Activity System

The participants in this study encountered serious contradictions in the MIS-Online curriculum activity system. These contradictions had multiple roots and origins, some of them originated from their wider context while others were derived from the personal characteristics of the individuals who utilized the curriculum. The contextual contradictions originated from the rules of the schools as well as the rules of the MoE, the inner and outer communities, the mediating artifacts involved in utilizing the curriculum, and the division of labor and responsibilities in the work environment. The personal contradictions arose from the users' personal understandings about the curriculum and their ideas about teach and learning. The contradictions arising from inconsistencies in personal and contextual environment that surround the MIS-Online curriculum served to interfere and reshape the optimal use of the curriculum inside the classroom.

The first contradiction located between the subject and the object nodes of the MIS-Online activity system (see Figure 4). This contradiction concerned with a number of issues of the curriculum itself.

According to the interviewed school supervisors, one of these issues is the relatively small number of learning resources that the curriculum has.

"The curriculum needs to have additional learning resources to give students an opportunity to acquire knowledge easily and see what they learn in real life examples" (Noha, Oula, & Saed).

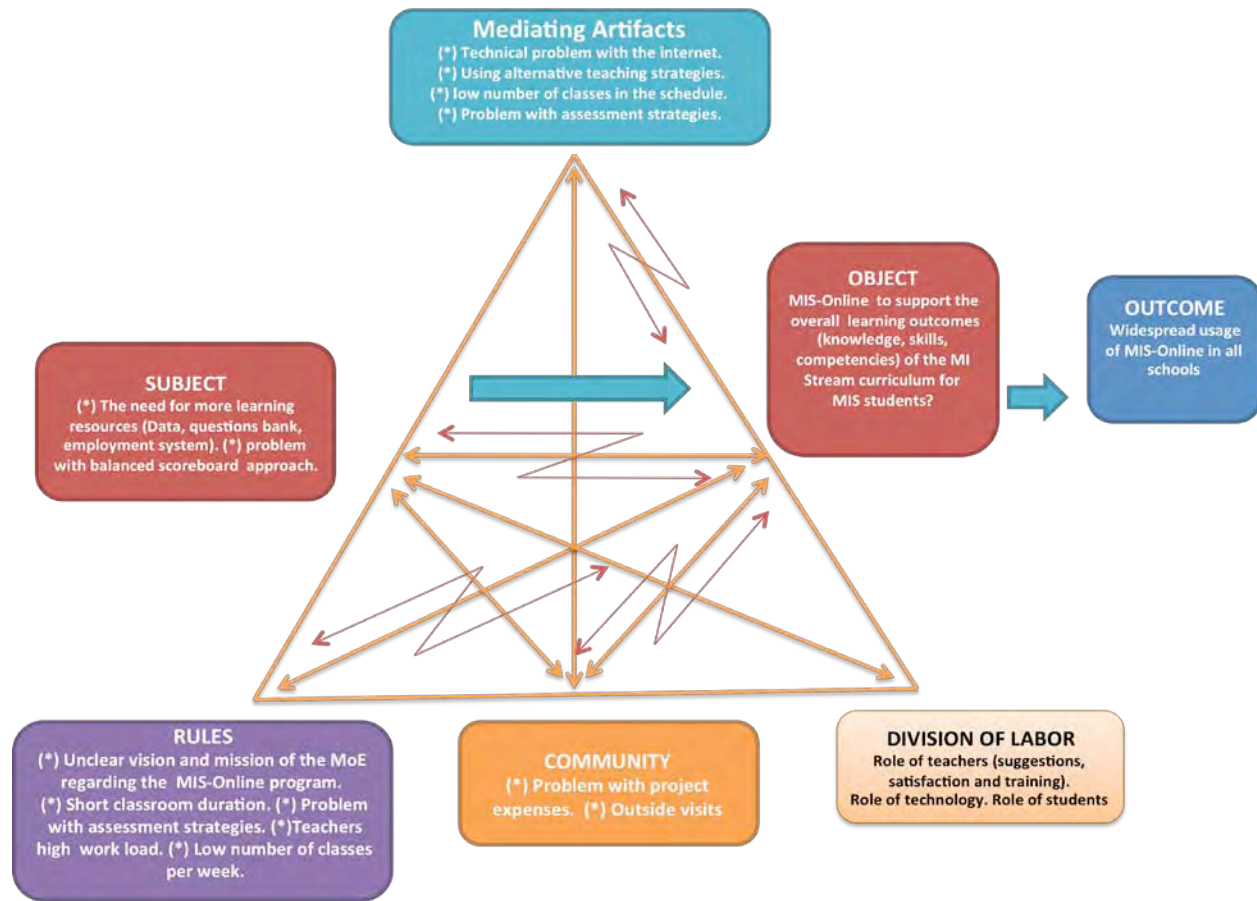


Figure 4. The activity system of the MIS-Online curriculum (contradictions shown in broken arrows).

An example of such learning resources, as some interviewees suggested, is including a bank of questions that can be of great help for students to assess their achievement and maximize their learning. Another example of these resources is including some business and financial data in the curriculum to help students understand strategies used to analyze these data and learn from them. Additionally, adding some information about the national employment system to the third story in the curriculum would help students understand the criteria used to hire employees and simulate the real life situation of the market in Jordan.

“The curriculum can be enhanced to include additional learning resources such as questions bank, business data and information” (Noha, Oula, Saed, & Waleed).

Another important issue in the contradiction between the subject and the object nodes of the MIS-Online activity system concerned with the use of balanced scoreboard approach that the curriculum gives to students. Several teachers complained about this approach and considered it as a complicated and unneeded activity. Similarly, school supervisors shared the teachers this complain and suggested starting offering this approach from the early beginning of the curriculum (from the first story) in order to train students on how to utilize it throughout the course.

“We have a problem in teaching students use the balanced scoreboard activity in the curriculum, students always complain about it, I suggest either dropping it from the curriculum or starting it

from the early stages of the curriculum in order to train students on how to use it” (Saed, Manal, & Amaal).

The second contradiction occurred between the rules and the object elements in the MIS-Online activity system (see Figure 4). Several participants commented on that contradiction. From their perspectives, the main problem revolved around the strategic policy of the MoE and the way the ministry deals with the curriculum. One interviewee complained about the ambiguity of the MoE’s vision and mission of the MIS-Online curriculum itself.

“I believe that there is a problem in determining the vision and mission of the curriculum itself” (Raed).

“A serious problem that faces this curriculum is the absence of strategic planning from MoE regarding this curriculum” (Hashim).

According to that participant, that ambiguity was surfaced to the top when the ministry decided to reduce the number of the curriculum’s stories from 12 to 6 stories, which in part resulted in reducing the amount of knowledge and concepts that the students were supposed to acquire. That reduction has also pressured both teachers and students to rely on both the book and the MIS-Online course together.

In the same route, an interviewee commented on the MoE’s policy the guides the overall reform project. In that, he explained that although MoE has invested and improved several aspects of the educational system, but these aspects are still viewed apart from each other and need to be taken holistically by the MoE to harvest the fruits of the reform project.

“There is a planning problem in the MoE in separating between the various divisions of the national educational reform” (Hashim).

A sign of that problem, according to Hashim, seats arrangement in the classroom that does not support cooperative learning. Another example of that problem is the absence of ICT resources inside the classroom as well as the short duration of each classroom session that does not allow students to complete the outcomes of their lesson. In addition to that, the interviewee critiqued the strategies used to assess students. He mentioned that the assessment strategies used in MIS-Online curriculum does not match with its online nature.

“There should be a harmony between the policy that guides the whole reform project, teachers’ training, evaluation, and infrastructure” (Hashim).

All these burdens limit the success of the huge investment and efforts that the MoE has put toward the reform of management education. Therefore, he suggested reconsidering the reform policy of the MoE to maintain the harmony between several parts of the educational system and try to orchestrate these parts together. In other words, the interviewee means that the efforts exerted in reforming the teaching of such a curriculum should be in accord with the assessment policy, classroom’s seats arrangement, technology used in the classroom, the classroom duration, teachers’ duties, and the roles of school supervisors as facilitators.

Another related contradiction that many participants addressed throughout their interviews was the low number of classes assigned for MIS-Online in the school’s schedule. According to these participants, four sessions per week are insufficient to accomplish all activities in the MIS-Online curriculum.

“The curriculum requires more time to complete its activities, having four weekly sessions is insufficient to let students complete all the required activities to enhance their learning” (Mahmoud, Samar, Waleed, Noha, Yasser, Amjad, & Omar).

It is important to note, that the curriculum’s activities require students to go out of the school and collect and analyze data, which takes much of their time. Similarly, teaching MIS-

Online curriculum puts extra work on teachers to prepare for their lessons and supervise and track the work of their students. That extra work, however, is neither considered as an additional work by the MoE nor the schools. Many participants requested reducing the workload of MIS-Online teachers for the sake of motivating them to do better in teaching. Additionally, some interviewees demand treating MIS-Online teachers differently, as teaching the curriculum requires collaboration between teachers from different MI disciplines.

“Yes, teachers have high teaching load, and there should be certain incentives to encourage them carry out all activities in the curriculum” (Noha, Issra’a, Sana’a, Wael, & Ashraf).

The third contradiction was located between the mediating artifacts and the object nodes in the MIS-Online activity system (see Figure 4). This contradiction concerned about three major components - the pedagogy, assessment strategies, and the technology used in the MIS-Online curriculum. All participants agreed that the problem that faces MIS-Online curriculum is a technical rather than content one.

“There is a technical problem that faces MIS-Online curriculum, the Eduwave platform that hosts the curriculum has some technical problems and need to be solved” (Waleed, Noha, Hashim, Amjad, Omar, & Saleh).

Poorly maintained PCs and unreliable Internet connectivity are examples of the technical challenges that the MIS-Online users experience. These challenges, however, force them to take the curriculum’s CD to home and open it using their own PCs. According to the MIS-Online designers, there are several activities in the curriculum that requires high-speed Internet connectivity. Without these mediators, however, the curriculum loses many of its online features such as supporting group learning and exchanging knowledge and experiences between users.

“Almost all activities in the curriculum require a high speed internet to enable users to access its learning resources and exchange their ideas between them” (Saed, Waleed, Noha, Manal, Isra’a, Maisa’a, Sana’a, Wael, & Ashraf).

Another aspect of this contradiction concerns the pedagogy of MIS-Online curriculum at schools. Many Participants commented that some teachers teach the content of the curriculum using their own teaching strategies but not the Project Based Learning (PBL) strategy that was used in designing the whole curriculum.

“Not adopting Project Based Learning (PBL) strategy to deliver the content of the curriculum is another serious problem that faces its implementation” (Hamzeh, Nabeel, & Saed).

When inquired about why teachers tend not to use the PBL strategy, both teachers and school supervisors attributed that to the time that the PBL strategy requires. It is important to mention that PBL strategy requires extra time from teachers to supervise students and track their progress in their projects. These hurdles, according to many school supervisors, halt the curriculum and the utilization of its advanced online features.

“There is no meaning of conducting the activities of the curriculum without using PBL strategy, simply because the whole curriculum is built according to that strategy and it can’t be implemented without using it” (Hamzeh, Saed, & Fatima).

“In addition to the technological and pedagogical obstacles that face the conduct of MIS-Online curriculum, the assessment strategies used to assess students adds another obstacle.

The absence of computer based assessment activities is a big problem in this curriculum, teachers are forced to teach using PBL but they don’t know how to assess their students” (Waleed, Saed, Israa’a, Oula Sana’a, & Wael).

According to many participants, the traditional assessment strategies used in assessing students’ achievement need to be developed and reformed. Again, the Tawjehi exit test is one of

the points that most interviewees critiqued. They mentioned that Tawjehi put pressures on both teachers and students to teach and learn differently. Teachers follow certain passive teaching strategies to ensure the delivery of the required information to students and the students pay more attention to memorize this knowledge in order to pass the Tawjehi.

“Tawjehi exist test limits us from fully enacting all activities, simply because these activities are designed according to PBL and the final Tawjehi test is traditional and tests students knowledge but not skills” (Wael, Isra’a, Sana’a, & Ashraf).

One possible way to reduce that pressure is to count students’ scores on the 11th and 12th grades. In this way, we can ensure that students will pay more attention to acquire both knowledge and skills. Again, this requires a transformation of the MoE assessment policy to go in accord with the reform project that the ministry has adopted in the last decade.

The fourth contradiction was located between the community and object nodes in the MIS-Online activity system (see Figure 4). As discussed earlier, the pedagogy of MIS-Online curriculum designed according to project based learning (PBL), which requires students to go out and visit several places in the nearby markets. Although the diverse benefits that the learners gain from learning through this strategy, there still several obstacles that prevent them from maximizing their learning. One of these obstacles was a family limitation. According to some participants, this limitation affects female students in particular as most parents do not allow their young daughters to conduct such a site inquiry alone.

“The reason why we don’t conduct sites’ visits is the parents of our students. They do not allow their daughters to go out of school to conduct a site visit” (Isra’a, Sana’a, Manal, & Maisa’a).

This limitation, however, is serious and begs for alternative solutions. Probably, one solution could be allowing students to conduct these site visits with their teachers. In this way, parents concerns would be resolved. However, this solution might contradict with the teachers themselves, as most of them are already overwhelmed with their work responsibilities and might not be able accompany their students. Reducing teachers’ work responsibilities may help teachers both to better guide their students and to give students the chance to explore the real life markets.

Another aspect of the contradiction between the community and the object in the MIS-Online activity system is the expenses that the PBL strategy of the curriculum puts on students. According to several teachers, most families are not financially able to support their kids in doing their projects at their own expense. Three female teachers mentioned:

“... not all my students are able to cover their projects’ expenses. This limits us from asking our students to conduct all activities in the curriculum” (Isra’a, Maisa’a, & Sana’a).

This limitation therefore, prevents most students from acquiring the knowledge and skills that they would gain from creating their own projects.

Resolving Internal Contradictions

To resolve the internal contradictions highlighted in the earlier section of this study, the MIS-Online curriculum developers need to consider enhancing their product by adding some additional learning resources to it such as creating a bank of questions, including data on the national employment system, and moving the balanced scoreboard approach to the first story. In addition, involved stakeholders need to secure stable internet connectivity to all MIS-Online computer labs to allow students benefit from the online features of the curriculum such as creating learning communities among learners to enhance their communication skills, and organizing a national annual exhibition of students’ projects to give both students and teachers an

opportunity to maximize their learning and increase their motivation to learn. Furthermore, sustaining localized teachers' training programs appears to be essential to maintaining a high quality of teaching for students. It is important to mention that holding several training workshops for teachers and school supervisors around the year would help in maintaining their high level of preparation.

Resolving External Contradictions

To resolve the external contradictions, MoE may reconsider certain facets of its reform policy. In doing so, the MoE may need to put more effort into reforming the classroom structure, such as seating arrangement to encourage students to work and learn cooperatively. In addition, providing classrooms with the needed technology (i.e., portable computers and data show, wireless internet connection) would give both teachers and students an opportunity to explore the multiple online features of the MIS-Online curriculum.

Another important contradiction to resolve is changing the classroom-related policies, such as extending the class time duration and increasing the number of weekly classes for the MIS-Online. In achieving such changes, both teachers and students would have sufficient time to learn and take the curriculum activities and reflect on them.

In addition, reducing the workload of MIS teachers should receive a higher attention from the MoE. It is important to note that reducing those teachers workload would contribute in guiding their students in a better way. This need seems to be of further importance because teaching the content of the MIS-Online curriculum requires collaboration between all MI teachers to cover the diverse content of the curriculum. Furthermore, providing teachers with certain incentives would greatly contribute to complementing the success of the MIS-Online curriculum. This incentive, however, could be either financial or emotional.

A final issue for the MoE to consider is maintaining a harmony between the diverse aspects of educational reform that the ministry has adopted (i.e. educational policies, teachers' training curriculums, teaching strategies, assessment strategies, and school and classroom infrastructure). Forming a higher supervisory committee for the MIS-Online would be of great significance to ensure realizing the MoE's vision and mission of the MIS-Online curriculum.

Recommendations

In the light of the findings of this situational analysis study, the following recommendations may help in improving the quality of the MIS-Online curriculum and its execution in schools.

1. Rollout MIS-Online Curriculum to All MIS schools; the report shows that the MoE-ERfKE objectives and streams learning outcomes are achieved. Rolling out the curriculum requires very careful planning and preparations. In order to move forward, a special MIS-Online Committee representative of all concerned parties should be formulated. This committee should be responsible for all MIS-Online rollout activities and challenges.
2. Develop an MIS-Online Delivery plan and implementation strategy where the number of classes and duration is specified, the way of delivering the curriculum is identified in a constructive manner (PBL methodology), and emphasizing the utilization of the

integrated way of teaching MIS-Online curriculum, which facilitates the achievement of the expected learning outcomes.

3. 3. Conducting training workshops throughout the year will give teachers and school supervisors the opportunity to learn from each other's experiences. Specific training sessions can be delivered to MIS teachers to address; PBL and inquiry based learning training curriculums, Co-planning and teaching, assessment trainings on developing rubrics and other reflective evaluations tools, as well as story lines and topics such as the feasibility study, BSC, budget and fund seeking.
4. Additional learning resources could be added to the content of the curriculum. Examples include; questions banks, additional business and financial data, and Jordan National Career Book. In light of the MIS-Online content, content developers could build a matrix of these resources and update the content of the curriculum accordingly. These resources can be stored in an e-library including learning resources, which can be easily mapped to the stream outcomes and available for all teachers, students, and school supervisors.
5. Re-authoring some component of the content such as the feasibility study storyline by content developers in order to make it easier and more relevant to users. Training teachers on how to deliver the feasibility study could greatly help students better understand it and apply its content and relocating others such as the balanced scoreboard approach such as moving it to the first component in the curriculum. (These are only some examples of possible changes).
6. The curriculum requires students to fill a lot of templates and PBL application tools, and in most cases, these tools and templates need to be mastered by teachers. Having an electronic version of an adequate teacher guide is imperative, and this teacher guide should provide the opportunity to MIS-Online teachers to modify and update the templates according to students, teachers, schools and community needs.
7. Integrating students' projects in their evaluation; assessment of the student's projects can be done by developing an e-portfolio section in the MIS-Online curriculum for students to help them store their work throughout the year making it accessible to teachers and observers to assess their work making it part of each students' evaluation. This provides an opportunity to gather a collection of work to be owned by students, and the portfolio seeks to provide a body of work from which they can draw tangible examples that exhibit their knowledge and skills.
8. Creating a users' forum to enable students to exchange ideas about the projects they completed; this part is already addressed in the reflection element of each story line and needs to be activated. These forums can be hosted and managed by Queen Rania Center for Information Technology and specifically the education management system used by the ministry.

9. Find alternatives and implement best practices to overcome the connectivity challenges, including uploading all curriculum's stories to schools' servers. These servers need to be connected and synchronized with a main server that hosts the MIS-Online and run frequent updates.
10. An annual exhibition of students' projects would enrich students' experiences and help them exchange and develop their future projects ideas.

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