Accepted Manuscript of an article published in Innovations in Education and Teaching International
Cotterill, S. T., 2015. Tearing up the page: re-thinking the development of effective learning environments in higher education. Innovations in Education and Teaching International, 52 (4), 403-413. Available online: https://doi.org/10.1080/14703297.2013.862174

Article type: Conceptual

Tearing up the page: re-thinking the development of effective learning environments in Higher Education.

Stewart T. Cotterill

University of Winchester

Author Note

Stewart T. Cotterill, Learning and Teaching Development Unit, University of Winchester

Correspondence concerning this article should be addressed to Stewart Cotterill, Winchester University, Winchester, Hampshire, SO22 4NR.

[1] Email: Stewart.Cotterill@winchester.ac.uk

Abstract

The development of effective learning environments in higher education appears to becoming increasingly prioritised by higher education institutions. This approach reflects an increasingly ‘consumer’ focused student body, and higher education attempts to further quantify the quality of their products. However, all too often attempts to build more effective learning environments are hampered by the structures and processes that have historically existed in higher education. The traditional lecture-seminar approach is increasingly been seen as not supporting effective student learning. As a result, the quality of the student learning experience is being compromised. This paper explores some of the factors currently limiting the development of effective learning environments and considers relevant questions and possible solutions. In particular this paper explores the degree to which University interactions with student groups are driven by quality assurance processes rather than for maximising student learning.

Keywords: Student experience, constructivism, feedback, design, motivation, inspiration

Tearing up the page: re-thinking the development of effective learning environments in Higher Education.

Introduction

While many Institutions in the Higher Education (HE) sector advocate the development of a learner-centred environment, they do so within the constraints of structures and systems that disempower students, create limiting teacher-pupil dynamics and as a result are often guilty of implementing a curriculum driven by assessments and quality assurance processes. There appears to be an over emphasis in HE on how to demonstrate and assess learning outcomes rather than how to empower and inspire students to learn. The outcome of which is to decrease student drive and motivation. Indeed, in many cases specified *learning outcomes* are really *teaching outcomes*, and are too constrained in their focus. Universities can also become overly obsessed with the student voice and student perceptions for quality assurance reasons without really thinking about why students fail to be enthused by course boards and course/module evaluations, or continually rate feedback on assessments as needing to be improved.

Indeed, assessment and feedback is a good casing point for this potentially superficial involvement of the student in their learning experience. Universities invest a lot of time trying to enhance their feedback practices without really understanding how, when, and in what formats students would prefer their feedback. Often the starting point is the feedback style and structure that the academic prefers to give rather than how and why the student wants to receive feedback. Academics often talk about treating students as equals, but then adopt a teacher-pupil dynamic to assess the degree to which the academic (the expert) feels the student (the novice) has learnt what they should have. Maybe a better approach would involve a discussion with the academic and the student with both occupying the same level in

the discussions. The constraining factor there though is often time. Many University workload allocation models only allow the tutor 20-30 minutes to mark and feedback on an individual students' work. All of which results in a compromise that is not really beneficial for either party. So, a potentially restrictive pressure on the provision of feedback is the time allocated. Instead of developing good pedagogically driven practices that determine workload, the format of feedback appears to be constrained by the time allocated to the task. Formative assessment should, if adopting a learning approach, provide feedback to the student on their learning achievements (Knight, 2002), not simply a justification for why the student 'lost' marks. As a result, giving students the opportunity to demonstrate their learning and focusing on what they have learnt and what they can build on might be a more constructive approach (Nicol & Macfarlane-Dick, 2004). This would require a significant change in practice and assessment structure for many institutions, but has the potential to be massively rewarding for both the academic and the student. In recent years a number of University-based projects have sought to enhance student learning through the use of effective assessment and feedback strategies. One such example is the Transforming the Experience of Students Through Assessment (TESTA) project led by the University of Winchester. This project has sought to collect, analyse, and collate programme data into readable case studies, that are then used to engage in a conversation with the whole programme team about the findings. These discussions have welcomed clarification, contextualisation and challenge from academics on the relevant courses. Resulting in ideas and solutions emerging from these discussions with the whole programme team (Jessop et al., 2012). The Programme Assessment Strategies (PASS) project led by the University of Bradford is another example of an assessment-focused project. The PASS project has focused on how to design effective, efficient, inclusive and sustainable assessment strategies that deliver the key course outcomes.

When considering the extent to which students are seen to engage in the learning process, is the right question relating to poor student attendance ‘why do students choose not to attend lectures?’ or should we really be asking ‘do a formal programme of lectures best empower and inspire students to become autonomous learners’? Especially in light of the fact that Gibbs (2010) in his report ‘dimensions of quality’ argued that the number of class contact hours has very little to do with educational quality.

Much of what Universities are has emerged from traditional industrialised approaches to education. The physical space of University campuses is built around lecture theatres and seminar rooms, and the workload of many Faculty members is calculated based on the number of lectures and seminars that are delivered and the number of assignments that are marked. Indeed, even the job title of academics reinforces this teaching-based approach with experts titled *Lecturers* with the implicit assumption that their job is predominantly about lecturing. There are many creative and visionary staff that are seeking to transform and enhance the students’ learning experience in HE, but these visionaries are often constrained by the structures and systems that currently exist. These factors have the knock-on effect of limiting and disempowering many student learners.

It appears odd that a system that is devoted to demonstrating how much students have learnt and developed adopts an approach that sees the academic as the expert and the student as the vessel to be ‘filled with knowledge’. Indeed some academics fail to appreciate the importance of the student and their experiences in the learning environment. This was highlighted by Mihans, Long, and Felten (2008: p.9) who stated that “I think some teachers . . . are so focused on getting stuff done that they don’t pay attention to their students, who I think are the most valuable resources in a classroom”. While the academic will be the expert regarding the theory and research the student will have important knowledge and experience of their own. If the point of assessment is pure knowledge of a subject the academic is expert,

but if the focus shifts to the development of key cognitive skills and abilities this dynamic changes.

The focus of HE should be on motivating and inspiring students to learn rather than delivering a prescribed diet of what students are expected to learn. Research has highlighted the impact that curriculum design and the nature of the learning environment can have on the degree of motivation experienced by the individual student (Pintrich 2003, Pintrich & Schunk, 2002). Kember, Ho, and Hong (2010) developed a motivational orientation framework for University students. In this framework they outlined six facets of student motivational orientation that exist on continua with both positive and negative polar extremes. The positive poles on the six continua relate to compliance, individual goal setting, having a sense of belonging, interest, career, and university lifestyle. The negative polar extremes are reflected by low compliance, uncommitted, isolated, disinterest, lack of relevance, and viewing attending at university as a cost and obligation (Kember et al., 2010). Further details are provided in Figure 1. As the use of technology in HE continues to advance so the learning environment continues to evolve. The development of integrated learning environments that 'blend' a range of learning activities and approaches (such as VLEs) has generally been seen by the sector as a positive step. However, there are potential issues relating to the students ability to apply their particular approach to learning in these differing contexts (see Sharpe, Betham, & de Freitas, 2010 for an overview).

There is significant literature in the field of psychology that advocates the importance of developing intrinsic rather than extrinsic motives. Passing assessments are an extrinsic motive, and as such students motivated in this way will only continue to engage in learning until the assessment has been successfully passed. Intrinsically motivated students learn for the pleasure of learning and to accumulate knowledge. This motivation will continue to drive their learning after the assessment is passed and the course is finished.

The level of interest demonstrated by a student is a reflection of that individual's preferences, so if something does not meet with an individual's preferences their behaviour will demonstrate low levels of interest. Kember et al. (2010) suggested eight key elements in developing an environment conducive to motivating the student: establish interest, allow choice, establish relevance of the subject, consider the type of learning activities that will be most effective, develop understanding of key knowledge, implement effective assessment of learning activities, develop close Academic-student relationships, and developing a sense of student belonging in the peer group. As a result, academics that are keen to engage and inspire students should look to implement each of the above aspects in the learning environment that they construct.

Research suggests that the approaches to learning adopted by students are not stable psychological traits; instead students adjust their approach to learning depending on the learning environment and the requirements of the task (Gijbels, Segers, & Struyf, 2008). Indeed, research has shown that the learning environment can modify the students' preferred approach to learning (Ramsden, 1984). The assessments used to facilitate learning have been shown to be a potentially powerful tool for shaping student behaviour and influencing their approach to learning (Dart, 2006; Gijbels et al., 2008). Assessment methods that provoke anxious responses in the student have been suggested to result in the student adopting a surface approach to learning rather that the desired reflective and deep learning approach (Gibbs, 1995). Indeed students often vary their approach according to the perceptions they hold about the demands of the assessment. If an assessment requires just a passive acquisition of knowledge a surface approach to learning will be employed. When the assessment requires higher level cognitive processing to demonstrate a through understanding, integration, and application of the context knowledge, then students are far more likely to engage in a deeper approach to learning (Gijbels et al., 2008). The empirical evidence though has shown it is far

easier to influence students to adopt a surface approach than it is to effectively influence students to adopt a deep approach to their learning (Struyven et al., 2006). This suggests it is easy to negatively influence student learning, but to have a positive impact will take far more investment of time and effort. There is also increasing evidence of the importance of adopting a programme-level view of assessment rather than just focusing on individual assessment tasks or modules of study (Gibbs, 2009; Gibbs & Dunbar-Goddet, 2007).

While there is a reasonably well-developed body of knowledge regarding the learning of individual students, student learning in groups have only recently been characterised (Yan & Kember, 2003). Yan (2001) demonstrated that in group learning, like in individual learning, there could be both deep and surface approaches. Deep learning is characterised by engager behaviour and surface learning by avoider behaviour (Yan, 2001). Students who adopt *engager behaviour* work together to gain a better understanding of the course, while students using *avoider behaviour* achieve the minimal required input (Yan & Kember, 2003). The ultimate goal for students adopting an engager approach is to search for understanding and cross stimulation. In forming these groups students accept responsibility for theirs, and the groups, learning. These students learn about the learning process, and in the organisation and planning of learning activities. Peer interaction is viewed as crucial in this process, with learning requiring active participation and interaction, with a need to engage in a two-way process. This also suggests that education is not the transfer of knowledge, but the stimulation of student thinking. The role of the academic therefore should be to facilitate student learning through setting the task, stimulating student interest, and giving comments and guidance (Yan & Kember, 2003). In avoider behaviour groups students collaborate to complete a task more quickly, and as a result do so by expending less energy. This approach will facilitate the achievement of the goal, but not allow deeper learning to occur. The differences between

these two approaches are stark, so the academic community should be asking itself how to encourage and develop engager behaviour by student groups and to limit avoider behaviour.

The role of higher education in modern society

Diamond (2012) in the 'Effective learning and teaching in UK higher education' report highlighted that a principle function of any HE system is to "provide the professional people that a modern society needs to function and grow" (p.2). Diamond (2012) further highlights the fact that professions have their own way of speaking, thinking, and acting and that these skills are as important as raw subject knowledge. Based on this principle Kember and Leung (2005) suggested that the curriculum in HE should include the development of key intellectual, interpersonal, and coping skills, as well as an appropriate professional and disciplinary knowledge. *Intellectual skills* were suggested to include critical thinking, creative thinking and the capacity to deal with ill-defined problems. *Interpersonal skills* referred to communication ability, teamwork skills, interpersonal skills, and leadership skills. *Coping with an uncertain future* included flexibility, adaptability, and information technology skills. Students also need to develop *self-regulatory skills* such as time management, self-control, goal setting, developing an effective work/life balance, and the ability to pursue lifelong learning (see Figure 2 for further details).

A curriculum that emphasises the importance of these key skills and abilities might differ greatly compared with a curriculum that just focuses on discipline-specific knowledge. Instead of putting students into groups for group assessments in a module/unit of learning that are discipline knowledge specific, universities should have module/courses that focus on understanding and developing group work skills. Instead of attempting to embed employability skills into subject-specific modules, Institutions should seek to adopt the opposite approach of embedding subject-specific examples into modules that explicitly focus on the development of appropriate employability and academic skills.

The development of higher-order thinking and employability skills

The process of learning for the individual evolves from school to university as students develop intellectual resources for learning. The cognitive aspects of this transition are essential in facilitating learner autonomy (David, Brennan, & Broadfoot, et al., 2012). While there is general agreement that HE should be nurturing the appropriate higher-order thinking skills there is less agreement regarding how this can and should be achieved (Kember & Leung, 2005). A small number of institutions have developed courses specifically focused on developing these skills, but the majority have chosen to try and develop these skills embedded in the discipline-specific context. Indeed it is expected that through exposure to a stimulating environment, interacting with intelligent peers, good teaching, good facilities, and an interesting curriculum these skills will organically develop (Kember & Leung, 2005). The question though is how many universities can ensure the provision of these five crucial components?

Often courses focus on the subject-specific knowledge as the defining aspects of their courses, but Kember and Leung (2005) highlighted the fact that the "relevance half-life of knowledge has decreased" (p.259) and as a result graduates need to be equipped with self managed learning skills to keep up-to-date. As a result, maybe the focus of the curriculum needs to be adapted to give equal weighting to the development of effective learning skills. The Authentic Assessment for Critical Thinking Skills (AACTS) project partnership between University of Westminster and University of South Australia is one project seeking to address this issue by focusing on the development of critical thinking skills in students.

In some parts of the HE sector there is starting to be a shift, with some educators advocating a truer learner-centred approach to education. This is reflected in the emergence of an approach that focuses on the construction of knowledge rather than the transmission of knowledge (Chaijaroen & Khanjak, 2008). Indeed it is suggested that learning environments

that help students to develop the ability to learn and construct knowledge by themselves are both effective and desirable (Deejring & Chaijaroen, 2011). One approach that has been highlighted as supporting this is the development of a constructivist-learning environment. This approach advocates that the knowledge representations generated by student learning are mental representations similar to mental models. Also, the exchange of knowledge in these environments significantly aids student learning, and in turn encourages students to build their own knowledge and concepts (Driscoll, 2000). Indeed Deejring and Chaijaroen (2011) stated that learning environments based on constructivism could construct knowledge more effectively than a lecturing-based approach to learning. The suggestion here is that linear instruction in the form of tutorials, lectures and seminars will fail to accomplish the most important educational objectives, in part because of the over simplification of the materials and information presented. This oversimplification then inhibits the individual's ability to transfer knowledge to new domains (Spiro, Feltovich et al., 1992). This view is further supported by Professor Eris Mazur at Harvard University who suggests that the lecture sets-up a dynamic in which students passively receive information that they then quickly forget after an end of course test (Berritt, 2012).

Student engagement is considered to be a central requirement in student success in higher education (Bovill, Cook-Sather, & Felten, 2011). By adopting an active and participatory role in learning both learning processes and outcomes are improved (Kuh, 2008), while at the same time developing students as critical thinkers (Freire, 2003). This active learning not only suggests a move from passivity to agency, but also from just doing to developing a meta-cognitive awareness of what is being done (Bovill et al., 2011). This in turn can enable students to become adaptive experts who both recognise and relish the opportunity to break with traditional approaches and to develop new ones (Bain & Zimmerman, 2009). In trying to

achieve this shift in approach Bovill et al. (2011) suggested the following four approaches might support this shift:

i) Invite students to be partners in the learning process;

ii) Support dialogue across differences in both position and perspective;

iii) Foster collaboration with both students and academics taking responsibility for learning and teaching;

iv) Serve as intermediaries to foster new relationships between students and staff.

There are a number of funded projects that are seeking to further empower the student's to take a more active role in their learning. One example is the UK-based HE Academy (HEA) funded 'Student as Producer' project in progress at the University of Lincoln. This project is actively seeking to reappraise and enhance the relationships between students and academics.

Increasingly, students have adopted, and have been assigned, a customer role in higher education. Whilst it is important that students get value for money there has been an increasing view that students feel that someone else should take responsibility for their learning (isn't that what they are paying for?). As a result, students have fallen into the same trap as academia as a whole in looking at the number of *taught sessions* they get for their money. This perception needs to change. Instead of viewing their money as buying a degree and a certain amount of lectures, students should view their investment as being more like *paying for a gym membership*. Whilst joining a gym is an important step in keeping fit and healthy, it only works if you engage in the environment and keep investing time and energy into achieving your goals. So instead of buying a degree students are buying membership of a fantastic learning environment that is designed to give even greater benefits as their personal contribution increases. Just like with the gym analogy the fitness instructor can't make you fit, they can only seek to motivate, inspire and facilitate. So in HE the role of the academic

shouldn't be to teach, but to motivate, inspire and facilitate the learning of those students who engage in the environment.

Practical recommendations

Many of the issues discussed in this paper will not be new to many academics. Indeed, many academic staff are aware of the problems, but not necessarily clear on possible solutions. This is particularly true within the constraints of Institutional structures and the current economic landscape. Considering student engagement first, much of the lack of student engagement in their own learning can be traced back to the HE environment they encounter. Often students are not given clear guidance on what the required behaviours and actions are. If we present information in PowerPoint presentations, telling students that 'the notes will be available online after the lecture' we should not be surprised that students don't take notes. Indeed if lecturers only present information from the slides we should not be surprised if students choose not to attend and just pick up the notes at their convenience. So, the first recommendation (expanding on the first of Bovill et al.'s recommendations) is that programmes and modules clearly articulate what is required of the student right at the start of the course in year one. Then, to ensure that academic staff only seek to 'lecture' when it is a topic that they have expertise in. Around this small number of sessions staff can devolve more responsibility to students to produce work and present / question other student groups. Within this structure staff should also not look to 'police' group work too closely. It is natural to stray off topic, but the work will usually get done if you are not too rigid (just think about any group interaction, you talk about work and other things as well). The second recommendation is to build curriculums around transferable/employability skills rather than academic discipline knowledge and topics. The subject becomes the context in which the skills are developed rather than the other way around (often with subjects taught and skills mapped as an afterthought). Assessments should reflect this approach and be designed to

develop specific skills, but are written by the student in a specific context. This should then allow the student the freedom to focus on a topic within the subject that genuinely interests them. This in turn will inspire /motivate the student to learn, resulting in greater engagement in their own learning rather than being taught a specific curriculum (relates to the third of Bovill et al.'s recommendations). By trying to be too creative in the forms of assessment to stimulate learning it is possible to have the opposite effect. An essay that is written on something the student has a real interest can be more rewarding than other forms of assessments that are seen as more innovative. This focus on developing skills rather than just a specific block of knowledge also releases the academic member of staff from having to try to teach topics they are not necessarily expert in. Also, focusing on skills rather than just the knowledge allows the academic to not be an expert in the subject of the assessment. They can offer advice and support regarding the skills and process, but do not need to know or appear to know, everything about all the potential topics within their subject. The assessment focuses on the student's ability to construct a well-defined and articulated position based upon a critical review of the evidence to make an informed conclusion. Also, the development of these skills does not necessarily need to be written. This skill is not just limited to an essay. Different forms to the assessment can be used to develop the same core skills, such as verbally, in groups, and virtually. The third recommendation relates to the physical learning space. While it is difficult in the short term to drastically change the physical environment the colour and décor can be considered. To foster innovation and to create energy the environment needs to be inspiring. Bland neutral colours should be changed to include bold warm colours and relevant art. If we want students to learn we should seek to create a physical environment that conveys the same message. Not, as is often the case, to seek to make the learning environment as neutral as possible. Finally, students should be encouraged (and welcomed) to take greater ownership of their learning experience. The student voice

should be a key aspect of the development and design of the episodes of learning and should simply provide feedback as the customer. This could then lead to the emergence of a real partnership between students, academics, and institutions in the development of a really effective HE learning environment.

Summary

Current University structures and practices have emerged from a predominantly teaching-focused model. Within this existing structure it is difficult for academics to develop a truly *learner centred* environment. Universities to some degree need to 'tear up the page' and begin by placing the learner at the heart of their own learning environment. The role of the University and the associated academic staff should then evolve to become the architects of the student-learning environment. This in turn will allow the holistic development of the student learning experience. Within this new structure the role of the academic is to inspire, engage, facilitate, feedback, discuss, and to the plan the learning activities. The role of the students in this environment is to take responsibility for their own learning. Instead of having to focus on how to get students to turn up to lectures academic staff will be able to focus on conveying their passion and enthusiasm for a subject, rather than trying to teach a whole curriculum that they may not really have the knowledgebase of, or passion for.

In order to achieve this transition there are key questions that need to be answered. These include each subject area developing an understanding of what facets of the learning environment facilitate and inspire student learning amongst their cohorts. These optimal learning environments will look different for different subjects, in different types of institutions, and across different countries. The challenge for each University in the HE sector is to understand what works best for their students, and the only way this can truly be achieved is by asking the students. So, instead of designing an environment that only asks for student feedback after the course is completed students should be engaged as equals in the

design and development of the learning environment that can then help to release each student learners' potential.

References

Bain, K., & Zimmerman, J. (2009). Understanding great teaching. *Peer Review*, 11(2), 9-12.

Berrett, D. (2012, February 5th). Harvard conference seeks to jolt University teaching, *The Chronicle of Higher Education*. Retrieved from http://www.chronicle.com.

Bovill, C., Cook-Sather, A., Felten, P. (2010). Students as co-creators of teaching approaches, course design, and curricula: implications for academic developers. *International Journal for Academic Development*, 16(2), 133-145. Doi: 10.1080/1360144x.2011.568690.

Chaijaroen, S., & Khanjak, I. (2008). *Synthesis of learning innovation model enhancing learning's potential using brain-based learning*. Faculty of Education, Khon Kaen University.

Dart, J. (2006). Developing a learning environment conducive to active learning and participation: Group presentations and formative assessment at level one. *Journal of Hospitality, Leisure, Sport and Tourism Education*, 5(1), 58-65. Doi: 10.3794/jhlste.51.121.

David, M., Brennan, J., Broadfoot, P. et al. (2012). *Effective learning and teaching in UK higher education*. Teaching and Learning Research Programme, London: University of London.

Deejring, K., & Chaijaroen, S. (2011). The development of constructivist learning environments model enhancing cognitive flexibility for higher education. *European Journal of Social Sciences*, 26(3), 429-438.

Diamond, I. (2012). Forward in David, M., Brennan, J., Broadfoot, P. et al., *Effective learning and teaching in UK higher education*. Teaching and Learning Research Programme, London: University of London.

Driscoll, M. P. (2000). *Psychology of learning for instruction*, Needham Heights, MA: Allyn & Bacon.

Freire, P. (2003). From pedagogy of the oppressed. In A. Darder, M. Baltodano, & R. D. Torres (Eds.), *The critical pedagogy reader* (pp. 57-68). New York: Routledge Falmer.

Gibbs, G. (1995). *Improving student learning: through assessment and evaluation*. Oxford, Oxford Centre for Staff Development.

Gibbs, G. (2009). Characterising programme-level assessment environments that support learning. *Assessment & Evaluation in Higher Education*, 34(4), 481-489.

Gibbs, G. (2010). *Dimensions of Quality*. York: The Higher Education Academy

Gibbs, G., & Dunbar-Goddet, H. (2007). *The effects of programme assessment environments on student learning.* York: Higher Education Academy.

Gijbels, D., Segers, M., & Struyf, E. (2008). Constructivist learning environments and the (im)possibility to change students' perceptions of assessment demands and approaches to learning. *Instructional Science*, 36, 431-443. Doi: 10.1007/s11251-008-9064-7.

Hartley, P. (2005). Developing students' skills in-group and teamwork. In P. Hartley, P. Woods & M. Pill (Eds.) *Enhancing teaching in higher education: new approaches for improving student learning*. London: Routledge.

Jessop, T., El Hakim, Y., Gibbs, G., Hyland, P., Reavey, D., & Scott, I. (2012). TESTA: Transforming the Experience of Students Through Assessment, *Higher Education Academy*.

Kember, D., Ho, A., & Hong, C. (2010). Characterising a teaching and learning environment capable of motivating student learning. *Learning Environment Research*, 13(1), 43-57. Doi: 10.1007/510984-009-9065-8.

Kember, D., & Leung, D. Y. P. (2005). The influence of the teaching and learning environment on the development of generic capabilities needed for a knowledge-based society. *Learning Environment Research*, 8(3), 245-266. Doi: 10.1007/s10984-005-1566-5.

Knight, P. (2002). Summative assessment in higher education: Practices in disarray. *Studies in Higher Education*, 27(3), 275-286.

Kuh, G. D. (2008). *High-impact educational practices*. Washington , SC; Association of American Colleges and Universities.

Mihans, R., Long, D., & Felten, P. (2008). Power and expertise: Student-faculty collaboration in course design and the scholarship of teaching and learning. *International Journal for the Scholarship of Teaching and Learning*, 2(2), 1-9.

Nicols, D., & Macfarlane-Dick, D. (2004). *Rethinking formative assessment in HE: A theoretical model and seven principles of good feedback practice*. York: Higher Education Academy.

Pintrich, P. R. (2003). Multiple goals and multiple pathway in the development of motivation and self-regulation. *Development and Motivation*, 1(1), 137-153.

Pintrich, P. R. & Schunk, D. (2002). *Motivation in education*. Upper Saddle River, NJU: Prentice-Hall Merrill.

Ramsden, P. (1984). The context of learning. In F. Marton, D. Hounsell & N. Entwistle (Eds.), *The experience of learning* (pp.144-163). Edinburgh, Scotland: Scottish Academic Press.

Sharpe, R., Betham, H., & de Freitas, S. (2010). *Rethinking learning for a digital age: How learners are shaping their own experiences*. Abingdon: Routledge.

Spiro, R. J., Feltovich, Jacobson, M. J., & Coulson, R. L. (1992). *Cognitive flexibility, constructivism, and hypertext: Random access instruction for advanced knowledge acquisition in ill-structured domains. Constructivism and the technology of instruction: A conversation.* Hillsdale, NJ: Lawerence Erlbaum Associates: 57-76.

Struyven, K., Dochy, F., Janssens, S., Schelfhout, W., & Gielen, S. (2006). On the dynamics of students' approaches to learning: The effects of the teaching/learning environment. *Learning & Instruction*, 16, 279-294.

Yan, L. W. F. (2001). *Learning out of the classroom: The influence of peer group work on learning outcome*. Unpublished PhD thesis, The Hong Kong Polytechnic University, Hong Kong.

Yan, L., & Kember, D. (2003). Influence of the curriculum and learning environment on group learning approaches outside the classroom. *Learning Environments Research*, 6(3), 285-307.

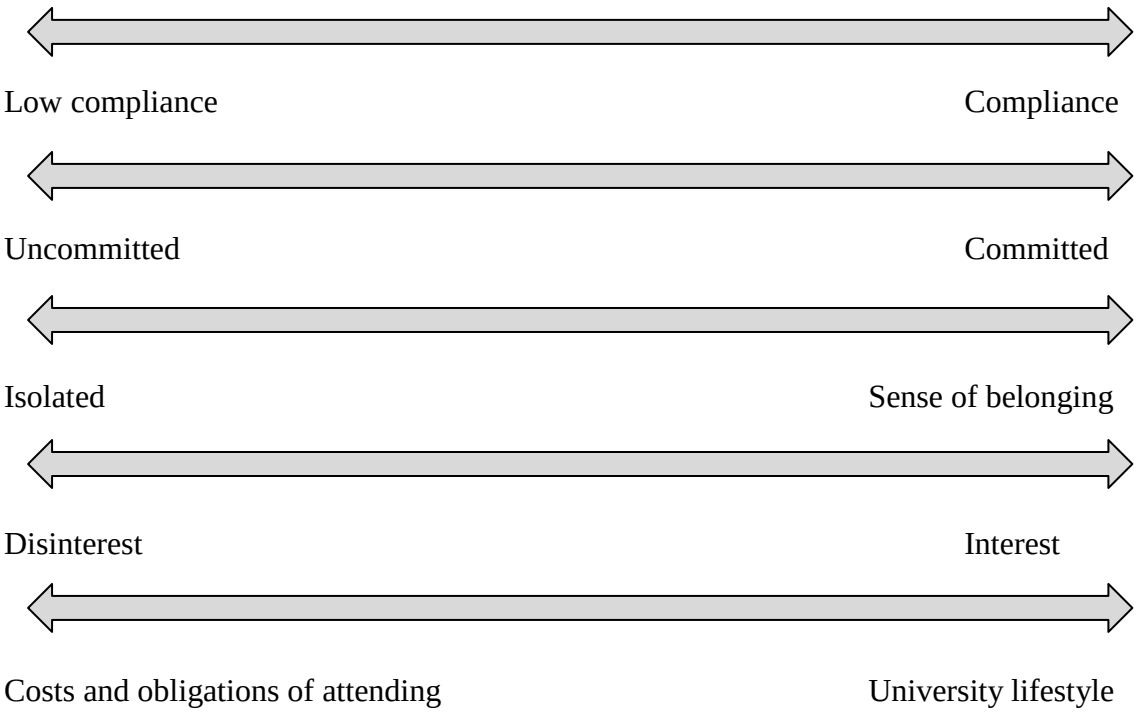

Figure 1. Motivational orientation framework for university students (reproduced from Kember et al., 2010).

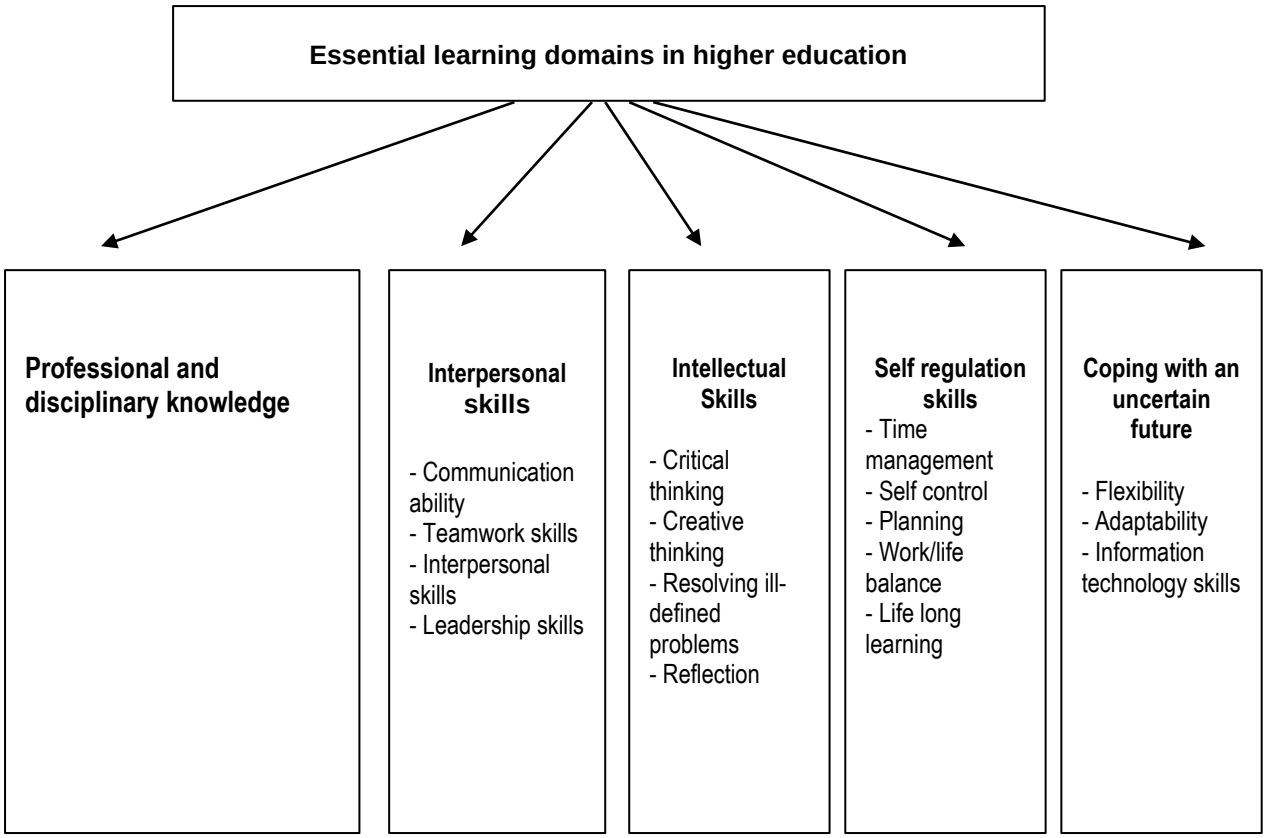

Figure 2. Essential knowledge and skills for students in higher education.