InterLearn – A TOOL FOR COLLABORATIVE LEARNING

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Abstract

InterLearn is a web-based learning tool to support collaborative learning. It is built on a data base structure that allows students' responses to online activities to be stored and viewed. Students' responses can be shared, that is, searched and viewed by their peers, or viewed only by their tutor. The prominent characteristic which makes InterLearn different to other online learning tools, is that students can edit their responses to the activities as many times as they wish within a given timeframe. This facility is to support students learning from each other and building arguments collaboratively. InterLearn was developed for institutional-wide use and is integrated to the My.Monash Portal. On-campus and off-campus students at both undergraduate and postgraduate levels are currently using it. This paper includes examples of the use of InterLearn in science, education, psychology and law programs, and concludes with some preliminary evaluation results and future directions.

Introduction

The use of web-based teaching and learning resources has become a common aspect of the lives of university students. Regardless whether students undertake on-campus or off-campus courses, they are constantly using online facilities to download teaching materials, search library resources, communicate with teachers and fellow students, submit assignments, check administrative dates and learn about their results. The *flexible access to information, students and teachers* is usually termed *flexible learning*. However, as pointed out by Laurillard, *information* should not be confused with *learning*: "It is as absurd to try and solve the problems of education by giving people access to information, as it would be to solve the housing problem by giving people access to bricks." (Laurillard, 1996, p.5). Laurillard's concern, that the technology be used to enhance learning rather than simply provide information, is one that needs to be considered seriously by the Higher Education sector if online learning is to be utilized effectively. The challenge for educators attempting to exploit the potential offered by online environments has been, as

Hannafin and Land (1997) note, to ensure that online courses present an integrated framework for students to work within, rather than a patchwork of discussion groups and chat rooms.

The use of online learning in Higher Education needs to be considered in relation to pedagogical approaches that ensure students have the opportunity to create knowledge and understanding. Constructivist theory, which asserts that knowledge is not passively received by learners but rather actively built in light of the existing understanding (Ridgeway & Passey, 1991; Von Glaserfeld, 1991; Hawkins, 1994), has been successfully applied to learning in electronic environments (Hannafin & Land , 1997). Laurillard recognizes the potential online learning represents as a means of actualising the principles of learning inherent within a social constructivist theoretical framework. This framework views the construction of knowledge as a social process since it is through engagement, enabled by language with a more capable other that a student will progress to the next level of understanding (Duffy and Cunningham, 1996). She emphasizes that such potential should be used to give students the opportunity to discuss and articulate their ideas (Laurillard, 1996). Like Laurillard, McMahon (1997) also suggests that the social constructivist view of learning provides a valuable paradigm for learning when placed within the online context, since although the web may not be highly interactive in a physical sense, it has strong potential for social interactivity (McMahon, 1997).

When applied to online learning, the social constructivist paradigm aims to create electronic learning environments in which the tutor can nurture active involvement on behalf of the learners, and in doing so, provide them with the opportunity to construct knowledge by engaging with others. Whilst valuing the need for interaction implicit within this approach, McAlpine (2000) also finds value in user control and flexibility of the environment. He suggests that students will find online learning developed in relation to the ideas inherent within social constructivism when the networking potential of the computer is exploited and utilised by students to find information, to manipulate data and to communicate with other students (McAlpine 2000).

InterLearn is a web-based tool developed at Monash University that attempts to apply contemporary research on social constructivism to online learning. It provides an integrated online environment that simulates the traditional face-to-face tutorial, where opportunities for interaction are embedded with other teaching and learning tasks. InterLearn provides a structured individual worksite that allows for student-to-student and student-to-teacher communication that can be stored on a database, re-accessed, and edited when required. InterLearn can be used to deliver an entire unit of study, or it can be integrated with face-to-face classes, and other tools such as discussion forums, multimedia resources, and course management tools.

This paper presents the history of the development of InterLearn, it describes its main features from the students and the teacher's perspective, and it gives examples of its current use in a variety of disciplines and learning modes.

The development of InterLearn

The origin of the InterLearn concept
The concept of InterLearn was developed by Murphy and Webster (Murphy 2000), and the Centre for Higher Education Development (CHED) at Monash University, and it was first used in 1999 with the first cohort of Monash academics undertaking the Graduate Certificate in Higher Education. The course, designed to assist academic staff in coming to terms with emerging rhetoric about flexible learning, provided the opportunity to put theory into practice. The challenge for the course designers was, in the spirit of social constructivism and flexible learning, to provide online interactions that allowed students to share, reflect, and contribute to an ongoing discourse about teaching and learning in Higher Education.

The course designers decided to produce their own application, after realising that there was no software in the market that would meet the pedagogical aim of the online tool sought. The first version of InterLearn ran on a stand-alone server, was suited only for small groups of students, and required web development expertise to produce and manage content. It was named for the guiding principle in its development "interactive learning on the internet".

Institutional collaborative approach

Several Monash academics, some of who experienced InterLearn as students while undertaking the Graduate Certificate in Higher Education, realised the potential of such an online tool in the context of their own teaching. When the university announced the 2000 round of Strategic Innovation grants, several projects were put forward which involved various extensions to InterLearn features with the aim of adapting this online tool to the teaching and learning in specific disciplines and modes. The projects were from areas as diverse as science, psychology, law and education, and involved an equally diverse group of students: large first year classes delivered both on-campus and by off-campus distributed learning, higher level units, as well as postgraduate courses delivered entirely online.

Following the current institutional strategies of providing central direction and support in the development of appropriate technology based tools, the different groups interested in extending and modifying InterLearn to suit their own needs, put their efforts together to develop a tool that would suit all parties involved and also be available to the whole university. InterLearn therefore became a university project. A Steering Committee, involving academics and technical staff from the different faculties and the University Flexible Learning Team, was formed to manage this development. Programming for InterLearn was developed by the Monash Information and Technology Services. It was piloted in Semester 2, 2001 and is now fully integrated to the My.Monash portal (Kennedy et al, 2001) and available to all academics who wish to use it for their courses.

InterLearn features

The online learning environment

InterLearn is built on a data base structure that allows students' individual responses to online activities to be stored, searched, and viewed. Students have their own InterLearn workspace for each unit of study (subject) that uses this tool, where they complete the required tasks and view the responses of their peers. The structure of the workspace is decided by the unit coordinator, but it has to fit within the InterLearn structure which consists of three hierarchical components: *modules*, *sections*, and *activities*. An InterLearn worksite is divided into *modules*; this division might be made in terms of the unit content, but the division can be also made on other grounds. Each module is divided into *sections*, and sections have one or more *activities* each (see Figure 1). Activities are hence the smallest units within the InterLearn structure. Student responses can only contain text with no special characters and are limited to 4000 characters. Students can edit their responses to an activity as many times as they wish before the closing date for the activity. The activities are labelled as *individual* or *shared*. Responses to individual activities can be viewed only by the tutor, while shared activities, once published, can be viewed by either all students within the same group or the whole cohort of students undertaking the unit of study, depending on the sharing levels specified by the unit coordinator. Students can search responses provided by their peers in four different ways: search for all responses made to one shared activity by all students, search for all responses made by a given student to all shared activities, search for the response made by a given student to a given activity, and search for a keyword within responses to a given activity. In addition to the typical response boxes to activities, sections can also include feedback boxes which students can use to post their comments to the teaching staff, either signed or anonymously.
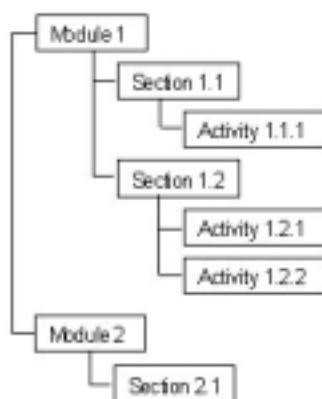

Figure 1. Structure of InterLearn

Figure 2 shows the front page of a worksite for a unit of study. The worksite navigation bar on the top includes links to the searching engine, a list of staff and student e-mail contacts, and a link to the My.Monash portal. "The legal framework for tribunal decision making" is the title of a module. Several sections of this module are visible (Introduction, and Topics 1 to 3). Within each section links are provided for the different activities. The last column of the table shows only the activities that are assessable and a green tick or a red cross to indicate whether an activity has been completed or not.

Figure 2. An InterLearn worksite

InterLearn can be used to deliver an entire course, or to supplement other face-to-face or online teaching and learning activities. It can be used as a stand-alone tool or it could be part of a set of other online teaching tools for the unit of study, such as discussion forums, multimedia resources, course management tools, quizzes, etc.

Management tools

InterLearn includes a content management tool for the online building and editing of a unit worksite. It is an easy-to-use tool that does not require technical knowledge. However, some very basic knowledge of HTML is useful if special formatting or inclusion of hot links is desired; a reference of common HTML tags is available to authors. The building of the worksite is self-explanatory: first a module is created, then one or more sections within it, and within each section one or more activities. The creation of activities allows authors to enter the title and text for the activity, to specify whether it is assessable or not, individual or shared, the dates between which the activity is viewable and editable, and the size of the text box for student input, if required. A unit InterLearn worksite does not need to be entirely built before students start using it; it can be modified and expanded as the semester progresses.

Another important management tool in InterLearn is the assessment tool. This is for tutors to mark student responses to the assessable activities. Tutors have the option of providing online feedback to student responses; student marks and feedback are displayed at the top of the relevant section of their worksites.

The group management tool is used to create and manage tutorial groups. These groups can be formed in two different ways: manually, adding students to a group one-by-one, or by a dynamic retrieval of tutorial lists from the university's database of student allocation to tutorials. The unit coordinator has access to

this tool, which is also used to assign tutors to the different tutorial groups. While the unit coordinator has access to all students' responses and their marks, tutors can only see and mark the work of their own students.

Uses of InterLearn

InterLearn is currently being used by approximately 2000 students in several different units and in many different ways. A sample of the different current uses is given here.

A first year science unit

SCI1020 is a first year core unit for science students. The aim of the unit is the development of generic skills in numeracy, scientific report writing, effective use of computer software and information technology, and teamwork. The teaching and learning activities revolve around project work carried out in weekly on-campus workshops, in which students conduct investigations following the scientific method and then present their work in a scientific report (Varsavsky, 2001).

Given its skills-based nature, this unit of study requires from students a continuous engagement with it throughout the semester. Students are required to work on open-ended projects, where they have to make important decisions on how to carry out the set investigative tasks, rather than simply follow a set of steps given by the instructor. This is always the most difficult hurdle to overcome for first year students, which combined with all other transition issues they have to deal with at that stage of their student lives, particularly the management of higher workloads, leads to frustrating learning experiences for some.

InterLearn based online tasks were added to the unit activities as an attempt to support a collaborative learning environment in which students could complete their project work. The online activities also had the purpose of providing a timeframe for the students, which would help them to keep their pace and manage their workload.

The online tasks were assessable and fully integrated to all other unit activities including workshops. The tasks were short and focussed, and although each of them had their own objectives, the common aim was to help students to get ready for the workshop or the new project they were required to work on. Before the introduction of these online tasks, tutors always had the difficulty of leading a discussion on the topic of the workshop, mainly because students came unprepared, but in many cases also because students found the open-ended projects too difficult to handle. The dominant comment at weekly meetings with tutors was about the "blank student faces" staring back at the tutor expecting directions, not knowing where and how to start. The online tasks had the aim to facilitate the discussion between students in preparation for the forthcoming project, to emulate a face-to-face discussion with no input from the tutor. Students had to come up with their own strategies between themselves, through an iterative process of submitting their suggestions online, reading and assessing other students' contributions and editing their own responses.

For example, in the project that involved investigating how the wing length and width affect the flight of a gyrocopter using a proper experimental design, students were asked to submit online their working hypothesis and discuss how they will apply the basic principles of experimental design in their experiments. They had to complete this online activity before the start of the workshop. The tutor could read these and start the face-to-face discussion from what student wrote, focussing on the main points and clarifying aspects that showed to be poorly understood. It was interesting to observe how different tutorial groups took, collaboratively, different approaches to the task.

In addition to the project preparatory tasks, InterLearn activities were also used for commenting on quantitative results found in their experiments and observational studies, assessing good and bad pieces of scientific writing, providing weekly feedback to the teaching team and reflecting upon the progress they made in the learning of the intended generic skills.

The student InterLearn worksite was organised by week, each week being a separate section with a subsection of "things to do before the workshop", followed by a subsection on "things to do in the workshop", and a feedback box at the end. All other unit resources were also accessible from this

worksite. Many students found that this week-by-week structure helped them manage their workload and keep up with the unit requirements.

First year psychology

Online laboratory activities have been introduced into two first year psychology units using the InterLearn program. The aim of the units is to provide a basic introduction to several core areas of the discipline, and typically students undertake one of these units in each semester in the first year of their degree. Each unit is offered both on-campus and by off-campus distributed learning, and has a large enrolment (> 1000), with a diverse cohort of students from a wide range of backgrounds and courses. The general teaching and learning environment is based on a traditional lecture plus laboratory model, with study materials provided to distance education students who cannot attend lectures. Students also have access to web-based learning materials, including topic summaries, audio lectures, and lecture presentations.

The InterLearn activities were introduced to support flexible delivery of the laboratory program, which is a mix of formal laboratory classes, and independent learning activities that students are able to complete at a time and place of their choosing. The aim of the laboratory program is to provide learning activities that enable students to develop generic skills within the context of studying psychology (i.e., information literacy, information technology, research methods and data analysis, communication skills including laboratory reports, essay writing, and poster presentations), as well providing opportunities for students to test and apply their understanding of key concepts.

The InterLearn environment allows the flexibility to structure the activities to suit either a 12-week program for on-campus students, or the weekend program for distance education students. Overall, the laboratory program was divided into eight modules, each covering a different topic and beginning with an introduction and set of learning objectives. Within each module, one or more sections were devoted to specific aspects of the topic, and each section consisted of set of activities for students to complete. The InterLearn activities were used in two ways. Some activities were designed as preparation for an upcoming laboratory-class activity. Typically these activities were shared and not assessable, and students were encouraged to search each other's responses to explore an issue or concept that was to be examined in class. The second type of activity was a set of 'flexible-laboratory' activities which students were required to complete for assessment and submit as individual responses. The flexible-laboratory activities directed students to use web-based or computer-based programs to carry out a set of exercises designed to provide an opportunity for students to apply their knowledge of certain concepts (e.g., experience with psychological tests; or training a virtual rat using operant conditioning).

Using InterLearn to present the laboratory program for these first year psychology units was seen to have several advantages. InterLearn provides a structured environment so that the integration of classroom and flexible-laboratory activities results in a more cohesive laboratory program. Within this structure there is the flexibility to meet the different demands of on-campus and off-campus teaching. The online laboratory program provides students with their own personal worksite and record of their learning, perhaps particularly useful for distance education students who typically feel 'overwhelmed' by the amount of information covered in a weekend school. InterLearn allows for easy construction of learning activities that students can complete at their own time and place, supporting flexible delivery and encouraging independent learning. The program enables the easy management of small assessment tasks for a large cohort of students, with the opportunity for frequent and rapid feedback by tutors. Also, like SCI1020, including learning activities that encourage students to come better prepared to laboratory classes can improve the quality of the classroom learning experience, and also allows tutors to use these responses as a point of discussion. The extent to which the InterLearn laboratory program meets this potential is being evaluated in a current research project, with particular attention to comparing its use for on-campus and off-campus students.

Postgraduate courses in law

InterLearn in postgraduate Law courses includes Legal Practice and specialisations of Decision Making for Tribunal Members and Forensic Studies. By the end of 2002 over 35 Law units (subjects) will be available in InterLearn. Most development of these courses and units use the Portal version of InterLearn to provide a 'holistic' approach to the online learning environment.

Legal practice course

The Legal Practice Course combines substantive practice areas, oral and written skills and a pervasive approach to issues of legal ethics. Examples of the core skills developed in the course include client interviewing, advising, negotiation, mediation and dispute resolution, advocacy, legal research, letter writing, drafting—litigious and non-litigious documents.

Using InterLearn learners are engaged through authentic and contextually situated online activities designed to allow collaborative and reflective learning and to encourage an understanding of core principles in each practice area. The activities seek to specifically develop core skills, allowing graduates to work at their own pace, place and time. A particular advantage has been the structuring of the units for graduates working in law firms full time with the variety of demands that this places on them while studying. Other features of the program is the provision of learning in the workplace which enables trainees to relate their learning to their daily experiences in practice; a portal interface that is easy to use and customisable, an individual worksite for each student that automatically records their work, submits assessment tasks automatically, advance organizers and access to a wide of range of resources including the databases and services of Monash Law Library.

Perhaps most importantly has been the packaging of a 'holistic' learning environment, whereby graduates using a web browser have all communication, search, activities and resources within the one interface and the presentation of units through structuring them in modules and topics. All topics have adopted similar presentations of introduction, preparation (resources required for activities), activities and further resources.

An example of an activity in InterLearn in the Legal Practice course uses a role-play activity with a predefined group (a feature of InterLearn). Participants are asked to take on the role of a Partner in a law firm who is supervising a trainee/articled clerk and prepared draft documents on behalf of a client (in a previous activity they had reversed roles). They study/review the paperwork/file received and provide comments and any suggestions for additions or amendments. These comments and suggestions can be viewed by the articled clerk and documents amended accordingly. A further component to the activity then instructs them to record the changes they made to the submission and the reasons for them. This reflection becomes available for future reference and linking to other activities.

Forensic Studies (Accounting)

The Graduate Certificate in Forensic Studies (Accounting) has been developed for practitioners in accounting that may be involved in litigation and will be especially beneficial for those who are called upon to give expert evidence in the courts. It has both a conceptual and practical emphasis, particularly relevant to the interaction between the accounting and legal professions.

The course aims to develop greater knowledge and skills for those accountants who are currently working in the forensic field as an expert witness and wish to update and upgrade their skills, wish to develop the skills necessary to move into the field, and may be involved in litigation.

The activities are designed to develop participants' ability to read, and understand and apply legal cases and legislation. The activities are also designed to assist participants to feel more comfortable talking about the legal system, the court hierarchy, and the nature of law.

An example of an online activity for this unit demonstrating the search response features is in the topic on the Expertise Rule. This activity is a shared, not assessable activity. Participants are referred to a link to gain preparatory information, and then asked to explain what personal and professional information his Honour's decision would require them to give to their legal representative. Participants are encouraged to search other students' responses and read what they have posted, modifying, on reflection, their response.

Decision Making for Tribunal Members

Members of administrative tribunals are recruited from a range of occupational backgrounds, and bring a variety of professional skills to their role. In addition, there are certain core skills and knowledge that all members require to carry out their role, whatever their professional background. Tribunals perform diverse functions, but the most common one is making decisions under legislation. The focus of this subject is on the core skills and abilities required to make fair and lawful decisions.

The subject is taught using InterLearn with participants having their own InterLearn worksite, where they submit assessable activities, store and access shared responses to activities, access online resources and participate in the discussion group. The subject consists of a series of week-by-week activities that require participants to work with the legislation that applies to their tribunal, and with cases that arise from their tribunal practice. Readings and commentaries are provided to enable participants to undertake the activities. The results of some activities are shared, to enable participants to learn from each other. Not all activities are assessable. Some are provided in order to prepare participants to undertake the assessable activities, but are not separately assessed. Where actual cases are used, a participant's responses to a learning activity are neither assessed nor shared, in order to preserve the confidentiality of the subject matter.

An example of an InterLearn activity in the Tribunals unit is to visit the websites of at least two tribunals that they know little about (a list of links is provided). Students are instructed to look for websites that are informative about the tribunals' functions, membership and procedures. On selecting one of these tribunals, they compare their own tribunal with the tribunal selected, analysing it in terms of the features discussed elsewhere in a previous topic and activity (Search and/or schedule is used to quickly locate these course materials). Participants are instructed to compare their responses with other students (using search response for the activity) and record their reflections on what they have learned by doing the activity and by reading other responses.

A more recent and exciting development in the use of InterLearn in the faculty of Law is the interest being shown by National Law firms to the online approach being used in the InterLearn postgraduate courses. The second half of this year will see firm specific customisation of the legal practice course for a national law firm. It is now anticipated that this will become a substantial component of the Postgraduate program and constitute a substantial growth of the course in an important market for the faculty. There are also several new courses planned for development in InterLearn in the near future.

Education units

InterLearn was introduced into the Graduate Diploma of Education (Primary) in semester one of 2002. This one-year course enables students who already hold an undergraduate degree to qualify as primary teachers. The student cohort is usually diverse in age (22 – 50+) and most students come from an Arts, Science, or Psychology background. Many of the students have been in the workforce for sometime and have made the decision to change careers. Their experience with computers, technology and the use of information and communication technologies (ICT) in teaching and learning varies greatly - some have never sent an email message, others are experienced users. Most however, even the experienced users, need help with how technology is used in a primary classroom to improve teaching and learning. It is a full time, on campus course that is very intensive.

An extensive online component, including a course website, threaded discussion groups, access to lecture notes, PowerPoint slideshows, streamed audio recordings of lectures, and email, is available to the students. The online environment is used extensively in some units but not at all in others. The purpose of providing the online environment is twofold. First, it assists students with their own learning and progress through the course. This ranges from access to information about particular units to access of enrolment details and results. Second, and perhaps more importantly, it helps the students, who will shortly be teachers whose professional lives will be inextricably linked to ICT in Education, to experience what it is like to be a learner in an online world. This experience is crucial if students are to develop a balanced view about elearning and its potential, or otherwise.

As part of a Strategic Innovation (SIF) teaching grant InterLearn was added to the online components available to staff in the course. As the new version of InterLearn was in its developmental stages in semester 1, it was decided that only one unit – *EDF5101 Teaching in Schools* - would experiment with its integration. The unit runs all year, has an extensive fieldwork component and a component to teach students about the use of ICT in education. As it deals with the professional practice of teaching in a primary classroom, all staff, although not directly involved in the teaching of the unit, contribute to its content. So a series of InterLearn activities (Module 1) that students would complete during the first semester and while out on fieldwork was developed by all staff. Another series of activities (Module 2) was developed to complement the ICT in education component. InterLearn can be used to present an

entire unit of study online, however at this stage Education's use of InterLearn in EDF5101 has been to integrate it with face to face interactions and other online environments. It has been particular useful for students to share practice teaching experiences/observations while they have been away from campus on fieldwork.

The students' response to InterLearn has generally been positive. They like its web based accessibility, its simple structure (as opposed to the somewhat chaotic structure of threaded discussion groups) and they like the sharing. InterLearn's ability to facilitate a shared construction of knowledge finds favour with most students and seemingly is helping to develop a positive attitude to online teaching and learning. There are some caveats however. The InterLearn activities need to be interesting, engaging and relevant, the technology needs to work (and work reasonably quickly), and student workloads need to be balance and reasonable. The response of the teaching staff to InterLearn has been more problematic. Many are still to be convinced of the merits of online teaching and learning and do not want to become involved. There may be other underlying reasons such as a lack of confidence with the technology and fear of increased workloads to explain the lack of engagement but there is also genuine concern about technology and its impact on students and teachers. However, Education will continue to experiment with InterLearn and with other online teaching and learning applications.

Evaluation

A research project, currently under way, is investigating the potential of InterLearn as an online teaching and learning tool by case studying subjects from the Education, Science, Medicine and Law faculties. The project aims to investigate the potential of InterLearn as an online teaching and learning tool for tertiary students, how particular lecturers from each faculty perceive InterLearn and use InterLearn in practice, how students regard online teaching and learning in general and InterLearn in particular, and how students perceive InterLearn and use InterLearn in practice.

The research involves collection of data from lecturers, tutors and students and is being conducted in three phases—pre semester, during semester and post semester. It involves collecting existing artefacts and teaching materials relating to the particular unit of study and its delivery, conducting interviews with teachers and students, compiling anonymous feedback from students via InterLearn, analysing web statistics and student responses to InterLearn activities.

Much of this data has already been collected and is being currently analysed. A progress report with the preliminary findings including lecturers' perceptions and use of InterLearn, the technical difficulties encountered by the teaching staff, observations from lecturers on how students use InterLearn, and the pedagogical benefits of InterLearn is already available (Romeo et al, 2002).

Conclusion

InterLearn is an example of how the Internet could be used to enrich students' learning experience, whether they are undertaking their courses on campus or at a remote location. It is also a successful outcome of collaboration between different areas of the university, which resulted in the development of a tool that is integrated to existing online tools available university-wide. This has not only resulted in significant cost savings in its development, but the centrally supported maintenance will also ensure its continuity and a life expectancy beyond a project led by individuals alone.

Although the first stage of the development has concluded, the Steering Committee is already thinking of possible enhancements and extensions. Before this however , a greater challenge is to encourage colleagues to consider the potential that information and communication technologies offer in supporting students' learning and enriching their experiences at university, to think of approaches that go beyond the common perception of flexibility and enrichment as "access to information".

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