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A Framework for Integrating Motivational Techniques in Technology Enhanced Learning

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Motivation

- Motivation is the reason that someone engages in a certain behaviour
- Motivation is a key factor in education
- Lot of research has been done by educational psychological researchers on motivational aspects in the educational domain
- These researches resulted in several theories and models
- Based on such theories and models, learning systems have been developed that use particular motivational techniques
- However, most systems include only one or few such techniques and typically they assume that the technique(s) are motivational for all learners alike

Motivation

- However, learners are motivated differently and what is motivational for one learner can be demotivational for another learner
- We aim at providing personalization based on motivational aspects
- The first step in doing so is to develop a framework of motivational techniques that can be used in learning systems

Aim

How to build a framework of motivational techniques that can be easily integrated into different learning systems?

- The framework should
 - Include many diverse motivational techniques in order to motivate different learners
 - Include motivational techniques that are domain-independent and course-independent in order to make it easy to integrate them into existing systems and courses

Framework for Incorporating Motivational Techniques

- Selected 11 motivational techniques
- Techniques are not new
- Techniques are based on motivational theories and models and most of them have already been successfully implemented in learning systems
- Techniques have been selected based on literature review and with respect to their capabilities to motivate learners
- Technique has to be domain-independent and course-independent
- Looked into the relationships of these techniques

Progress Timeline

■ Aim:

1. Provide learners with information about their progress in the course based on pre-defined milestones (e.g., assignments, quizzes, exams, projects, etc)
2. Show them their progress in relation to progress on the class (anonymous and accumulated)

■ Why motivational?

- assist with time management → increases confidence
- motivate learners to learn in the same (or quicker) pace as the overall class

Progress Timeline

- When can this technique be demotivational?
 - If learners have fallen behind, they might get impression that they cannot catch up
 - If too many milestones are remaining for them to complete
 - If nobody is at the same level as the learner
- Requirements for course and system:
 - Measurable milestones
 - Tracking of learners' completion of milestones
 - Access to start and end date of all learners

Progress Annotation

- Aim:
 - Display to the learner their progress through the course content:
 1. Allow learners to tag their active position in the course content
 2. Allow learners to tag the completed content
- Why motivational?

Learners can view and track their progress
Helps in time management
→ increases confidence and satisfaction on achievements
- When can this technique be demotivational?
 - If learners feel they are not progressing fast enough, even though they put in a lot of effort
- Requirements for course and system
 - Course must have content

Ranking

■ Aim:

- Rank learners based on certain criteria (e.g., performance, participation, etc.)

■ Why motivational?

Show statistics and allow learners to compare themselves
→ Increases satisfaction

Some learners will use this information to continually improve

Ranking

- When can this technique be demotivational?
 - If learners feel they should be doing better than they are
 - If they don't feel as though they have a sense of control
 - Since each ranking can be motivational for some learners but demotivational for others, personalization is an important issue
- Requirements for course and system:
 - There must be a minimum number of people enrolled
 - Criteria to use for ranking and track the respective achievements of learners based on the criteria

Awards and Achievements

- Aim:
 - Provide learners with incentives and/or recognition
 - Based on achievements, scales or levels (e.g., different types of forum users)
- Why motivational?
 - rewards the learner and provide recognition to the learner → increases satisfaction
- When can this technique be demotivational?
 - If the learner finds flaws in the methodology
 - If the learner does not get the recognition that he/she believes to deserve
- Requirements for course and system:
 - Components that associate awards/achievements with them

Posting Solutions

- Aim:
 - Post best solutions to problems/exercises in the course
- Why motivational?
 - provides learners with recognition if their solutions are posted → increases satisfaction
 - supports learners who may not have been able to fully answer on their own
- When can this technique be demotivational?
 - If a learner believes that his/her solution was better than the posted solution
 - If a learner never has the best solution
- Requirements for course and system:
 - Course must have graded activities
 - Course must be paced so that all learners have the same deadline

Goal Setting

■ Aim:

- Encourages learners to set a plan to meet an objective, which causes learners to think about and understand various component of the course
- Possible goals can be:
 - Achieve a certain grade
 - Planning timelines
 - Beat a certain % of class
 - etc.

■ Why motivational?

- allows learners to establish a connection between the learning environment and the learner's personal goals → comfort and preparedness → increases relevance

Goal Setting

- When can this technique be demotivational?
 - When the learner dislikes planning or is overwhelmed
- Requirements for course and system:
 - The course must have one or more course components to set goals based on

Knowledge Agent

- Aim:
 - An agent that is responsible for directing learners to the most appropriate information/content based on their request
- Why motivational?
 - supports and empowers learners to find/navigate to the most appropriate learning material → increases confidence
- When can this technique be demotivational?
 - If the agent does not answer the question
- Requirements for course and system
 - The agent must have access to various course information/materials

Caring Agent

■ Aim:

- An agent that is responsible for emotionally supporting, identifying with and assisting learners
- Displayed as avatar
- Common activities:
 - Advise learners on deadlines
 - Giving feedback to learner's progress
 - Providing hints if learners try to answer questions/problems
 - Etc.

■ Why motivational?

- supports and empowers learners → increases confidence and satisfaction

Caring Agent

- When can this technique be demotivational?
 - If it does not properly support the needs of a learner
 - If the learner is distracted by the agent
 - If the agent is perceived as annoying
- Requirements for course and system:
 - Agent needs access to information about the learner and course

Discussion Forums

- Aim:
 - Tool for asynchronous communication
- Why motivational?
 - Empowers and supports learners by facilitating peer assistance
 - Promote active participation of the learners
 - Increases confidence and attention
- When can this technique be demotivational?
 - If the forum lacks content
 - If the amount of content is overwhelming
 - Some learners might not feel comfortable to communicate in a “public” forum
- Requirements for course and system:
 - System needs to allow the integration of a discussion forum

Communications

- Aim:
 - Technique to communicate course information, for example, through emails, LMS messages, SMS, etc.
 - Can include announcements, solutions to exercises, but also personalized messages such as updates to their goals, progress, etc.
- Why motivational?
 - keeps learners informed
 - provides feedback/reinforcement to the learner
 - Increases confidence and satisfaction

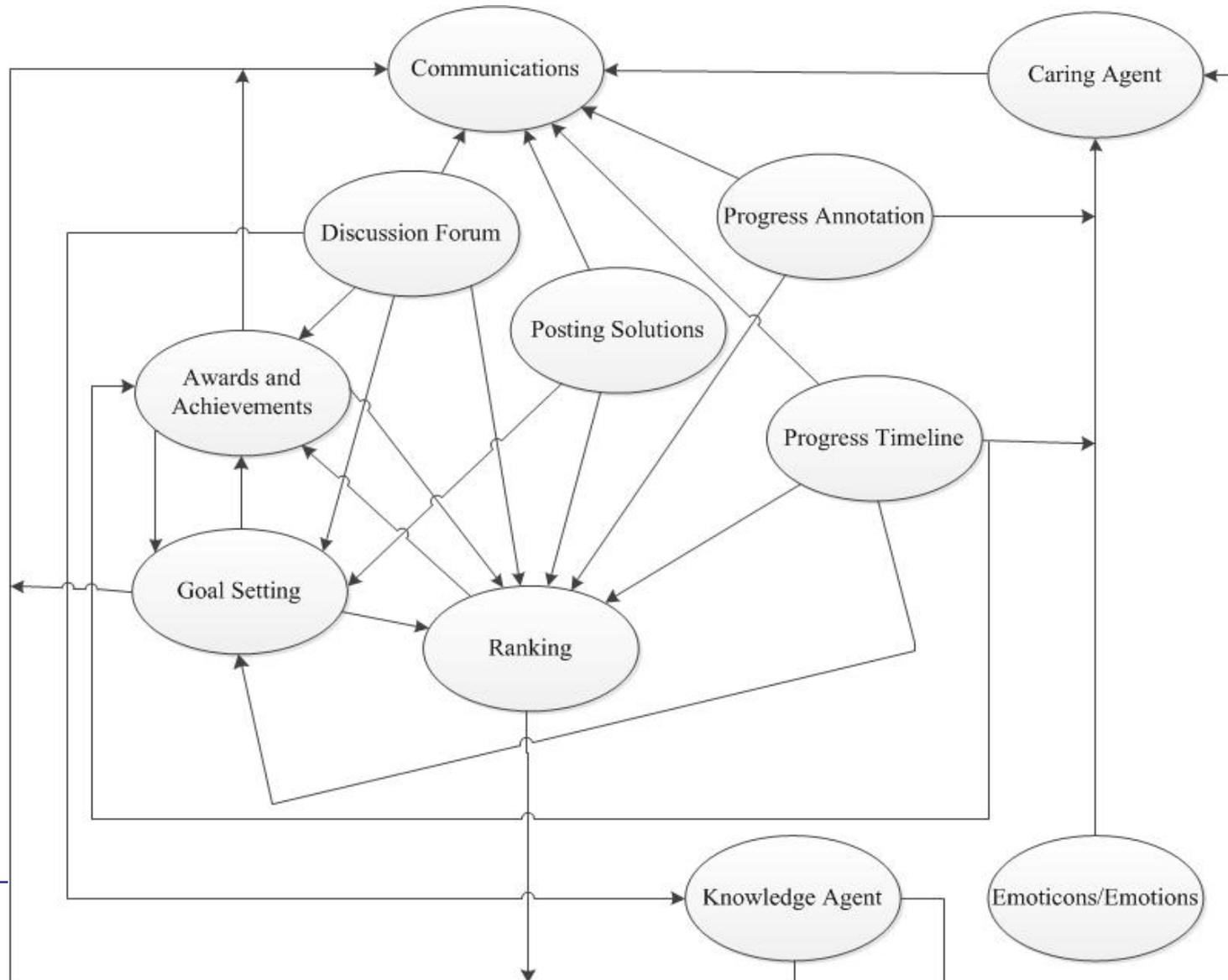
Communications

- When can this technique be demotivational?
 - If they contain too much content
 - If they are sent too frequently
 - If they are found to be spam
- Requirements for course and system:
 - Course must have content to communicate

Emoticons/Emotions

- Aim:
 - Pictorial representations of facial expressions and can be used to display extra meaning to the learner
 - Emoticons can be used
 - Add meaning to course content
 - Response to quizzes, exercises, exams, etc.
 - Emotions can be used by avatars (caring agents)
- Why motivational?
 - provides feedback and reinforcement to the learner → increases satisfaction
- When can this technique be demotivational?
 - If they are found to be annoying, unrelated or insulting
- Requirements for course and system:
 - The course needs to have content/activities for emoticons to be integrated

Relationships between Techniques



Conclusion

Our proposed framework aims at providing a set of course and domain independent motivational technique which can easily integrated into learning systems and courses

→ learners can select between different motivational techniques that can increase their motivation at different stages and in different situations

→ This framework is the basis for automatically providing learners with personalized motivational techniques that fit their motivational preferences and current situation