Constructionist and Connectivist Learning Theory (A Hitchhiker's Guide to Learning Theory)

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Background

If the terminology we've used up to now hasn't confused you yet, just wait. All these theories about constructing and connecting knowledge could get you in the end if you aren't careful.

Constructionist theories of learning are fundamentally related to the constructivist theories we last spoke about, because they both see knowledge not as something final and waiting to be possessed, but as always a work in progress. But constructionist theories they have an additional focus that is particularly timely in our rapidly changing technological environment.

In addition to acknowledging that we construct personal knowledge through interactions and reflection, constructionism suggests that our most meaningful learning occurs when we are engaged in collaboratively creating a publicly shared artifact or product. Where constructivism (and particularly cognitive constructivism) focuses on the knowledge of individuals developed substantially in social contexts, constructionism focuses on connected knowledge, knowledge that is continuously and intricately linked to a social and practical context, and at least partially remains embedded in the context, not just within the individuals that take part. That context might be building a house, doing scientific research, developing training, or producing weather forecasts, but the knowledge that' is developed comes about uniquely through those actions, through interacting with others engaged in the same actions, and through using tools specific to the actions.

Constructionism is the ultimate theory of "learning-by-doing.," because in this case, the doing is also a thing that gains knowledge—the discipline grows by our participation. There is a context, bound together by the people involved, but in the end it's bigger than the sum of the individuals. You have to take a step back to see it, but it's true. Your participation leaves a resonance, just like the rest of those involved, but it is only one part of the whole.

Constructionism isn't a complete refutation of formal learning in favor of informal avenues for learning. It isn't that the formal learning that takes place in courses and workshops has no place in constructionist theory, but that they comprise only one mode for learning, and perhaps not the one that leads to the most immediately useful and long lasting learning outcomes.

Connectivist theory is a special case of constructionism, although one could just as easily talk about it completely separately. Connectivist learning is learning that is embedded in a network of activity, distributed throughout a community, and in constant flux. In Connectivism, the important knowledge is not so much knowing that, or knowing how, but knowing where—where one can access knowledge when needed, and how knowledge is connected.

Connectivism is a theory that is highly relevant for contemporary times because so much learning today is developed and stored on the Internet. We communicate via the internet, search for information and opinions on the internet, publish our ideas and descriptions of what we learn on the internet, and we

develop and store collaborative documents via the internet. Someone once said, "I store my knowledge in my friends," which is an accurate description of how we rely on one another's specialized knowledge to help us achieve our goals rather than learn everything ourselves. It's also accurate today to say, "I store my knowledge on the World Wide Web," because we rely on the Web to discover information just-in-time to help us make decisions, write documents, provide illustrations and examples, and develop plans.

Both constructionism and connectivism suggest that our knowledge is not entirely within ourselves. We learn not only from our own experiences, and not only by hearing about the experiences of others, but we also gain from shared experiences in which our personal knowledge gain is only one result of the overall experience. From the perspective of these theories, personal knowledge is not sufficient to describe of how we perform in the world. Instead, knowledge belongs to the community and is stored both in people and in the tools they create. Your colleagues are not just people who do the same job as you, they are partners upon whom you rely to do your work.

Your computer, your weather data display system, and your smart phone are not just passive objects. They also contribute to the range of what you can know and do, and are repositories of large amounts of information and knowledge generated by the learning communities that created them.

Connectivism, and to a lesser degree constructionism, are theories of the Internet Age. Both constructionism and connectivism are heavily influenced by metaphors of the World Wide Web. In a similar way, however, cognitivist theories were influenced by a conception of the mind as a computer processor, and many of their concepts were derived from computer technology. So it is natural in the Internet age for the metaphors of mind to extend to a network. But in the case of connectivism, in particular, the connection is more than metaphorical. The internet is a now a primary tool for making connected knowledge possible and for storing connected knowledge. So while connectivism is not inapplicable to describing how learning occurred 20 years ago when books and classrooms were still the primary media for learning, it would probably never have been seen as a popular or viable theory prior to the Internet.

Connectivism can also be seen as just an extension of schema theory, the cognitivist theory of how we store memories in in our long term memories in semantic webs of knowledge. In some ways, connectivism merely extends that web beyond our own minds and into the communities and environments we live and work within.

Applications

Constructionism is a theory that's particularly valuable for developing strategies for training professionals working in s For a rapidly evolving information- and technology- driven environments. It's also particularly valuable for considering how professionals who are dispersed can have opportunities to learn and grow in their professions. Because it focuses on the connections, and doesn't give preference to the actual nodes of knowledge connected, it can build a capacity for knowledge that can withstand a world in a constant state of flux.

We are using constructionism whenever we open lines of communication between people. In the workplace, this might be done by providing collaborative workspaces, meeting rooms that are more than just tables and chairs, but spaces for collaborative planning development, and online locations for gathering resources and stories of best practices and lessons learned. CommmunicationThis might be through regular discussion groups, wikis and repositories, or even just hallway talk and lunch meetings. The more we encourage conversation, as well as documentation and sharing of knowledge, the more learning takes place. When we value work teams by giving them room to communicate and develop new ideas, and not just follow procedures, we are using constructionist approaches. As you can see, training strategies that employ constructionism depend on informal learning. But even informal learning needs nurturing and guiding, so it can still be considered a training activity.

When lines of communication are extended beyond the local workplace via web communications, conferences, and open source or other disciplinary journals, learning environments grow into communities of practice. With internet based communications, these communities can span oceans and bridge continents. A community of practice is a powerful concept for describing how professionals within a discipline grow through their exchange of knowledge in both formal and informal venues. Communities of practice can benefit by concerted efforts to encourage that exchange.

Limitations

Constructionism describes how many people develop their expertise in a profession, but it may not do as well in describing processes for entering the community of practice in the first place. There is always the problem of developing the prerequisite knowledge necessary to benefit from, and particularly, contribute to the community. To develop the basic skills and knowledge base necessary to become a contributing member is likely to require more structured training as well. When new techniques and tools are introduced, all the members of a community in effect become novices again to some degree, and formal learning might be required to generate the momentum for a community of practice to move forward.

References

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