

National learning goals and progression examples

PhD students all have individual study plans, which means that the journey towards a PhD degree differs with respect to a majority of activities during their education. Still each student has to achieve goal fulfillment and show progression towards these goals during their education. The ISP attachment is used to record and trace the PhD students' progression towards these national learning goals. After each ISP period (max 1 year) there is a follow-up and activities during the period where the student has shown some progression towards a goal is added for that goal. Thus a picture emerge helping the student and supervisor to identify goals that need to be addressed in the next ISP period. The ISP attachment can therefore be a useful tool when planning forward and when deciding that the student is ready for their defense.

We have put together some examples in order to help supervisors and PhD students understand how to make the best use of the attachment. **Note** that this list is not exhaustive but it contains some examples per goal to illustrate what could be listed.

	Goal	Example activities to list (note that this list should accumulate over time). One entry implies started.
Knowledge & understanding	<i>Demonstrate broad knowledge and systematic understanding of the research field, and</i>	<ul style="list-style-type: none"> • taken relevant courses and / or read relevant books • active participation in seminars • active participation in relevant summer school • surveyed & described research field
	<i>advanced and up-to-date specialized knowledge in a limited area of this field</i>	<ul style="list-style-type: none"> • thorough overview of related work • descriptions of technology, techniques & approaches • active participation in relevant conferences • contributed to scientific journals & conferences in PhD topic
	<i>Demonstrate familiarity with research methodology in general, and</i>	<ul style="list-style-type: none"> • took a course in research methodology • conducted a research study (e.g., a literature survey, case study, experiment)
	<i>with the methods of the specific field of research in particular</i>	<ul style="list-style-type: none"> • designed & conducted a study (under someone's guidance) • independently designed a study (took the lead) • discussed & motivated choice of methodology
Competence & skills	<i>Demonstrate the capacity for scholarly analysis and synthesis as well as</i>	<ul style="list-style-type: none"> • performed analysis of qualitative and / or quantitative data (as part of e.g., a case study or survey) • synthesized evidence through literature study • analyzed and synthesized results from 2 studies
	<i>to review and assess new and complex phenomena, issues and situations autonomously and critically</i>	<ul style="list-style-type: none"> • performed a literature review as lead author • reviewed conference/journal papers • reviewed master theses • investigated the relevant phenomena/issues/situation in real setting (case study) • showed ability to address/incorporate new technology, research and research questions into their own research (e.g. write suitable related work)
	<i>Demonstrate the ability to identify and formulate issues</i>	<ul style="list-style-type: none"> • research methodology course

	<p><i>with scholarly precision critically, autonomously and creatively, and to</i></p>	<ul style="list-style-type: none"> • lead the gap identification and problem formulation steps/phases in an empirical study • contributed in all phases of empirical studies from ideation to reporting, and also the revision process • provide topics for (and supervise) master theses
	<p><i>plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames and to review and evaluate such work</i></p>	<ul style="list-style-type: none"> • applied various research methods to perform empirical studies • discuss with supervisors and also reflect on the progress of the planned studies in ISP • planned & delivered in time on various tasks (e.g., results or texts)
	<p><i>Demonstrate through a dissertation the ability to make a significant contribution to the formation of knowledge through his or her own research</i></p>	<p><i>Certainly not fulfilled until defense but there are things that show progression towards it:</i></p> <ul style="list-style-type: none"> • RP seminar, TP seminar, final seminar • significant set of papers (and their contributions)
	<p><i>Demonstrate the ability in both national and international contexts to present and discuss research and research findings authoritatively in speech and writing and in dialogue with the academic community and society in general</i></p>	<ul style="list-style-type: none"> • present own research at various meetings (outside supervisor group) • present own research at national and international research events, e.g. industrial events • present own research at research appropriate workshops and conferences • participate in a PhD symposium • co-author papers with other researchers within as well as outside of HIS • co-author papers with industrial practitioners • participate in Forskarfredag • Respond to, correct and/or correctly argue against written critique to a paper, e.g. Rejoinder to resubmission of conference or journal paper. • Be part of a program committee or review board of workshops, conferences or journals.
	<p><i>Demonstrate the ability to identify the need for further knowledge and</i></p>	<ul style="list-style-type: none"> • defined problem area in RP • designed a knowledge-seeking study (e.g., case study or literature review) • formulated research questions in paper 2 and 3 • described and motivated future work in paper 3 and TP • course in writing research applications • participate in research application writing
	<p><i>Demonstrate the capacity to contribute to social development and support the learning of others both through research and education and in some other qualified professional capacity</i></p>	<ul style="list-style-type: none"> • course in pedagogics • teaching activities • demonstration activities • publish an article in a popular science outlet • systematically analyze course feedback and suggest improvements in course design and setting through evidence-based reasoning • conduct a public seminar / workshop on topics in the area of Informatics

Judgment & approach	<i>Demonstrate intellectual autonomy and disciplinary rectitude as well as</i>	<ul style="list-style-type: none"> • single author conference/journal article • read and discuss "God forskningsset" Vetenskapsrådet, and discuss implications with supervisor and others within and outside the research group
	<i>the ability to make assessments of research ethics</i>	<ul style="list-style-type: none"> • course in research ethics • identify, mitigate, describe and discuss validity threats • discuss ethical implications of the research (e.g., how the results could or should be used)
	<i>Demonstrate specialized insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used</i>	<ul style="list-style-type: none"> • research visit • write a (draft) research application • discuss and reflect on research results and how their interpretation may be used • discuss and reflect about the consequences of the research in different contexts, for example global societal challenges such as UN Agenda 2030 for Sustainable Development and its 17 goals, and locally

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